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General Articles

TUBERCULIN AND TUBERCULIN TESTING*

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No apology is necessary for calling your attention to the subject which is the title of my paper to you to-day. In spite of the mass of literature at our disposal, rapidly accumulating as it is to such an extent that it becomes a task almost unbearable if one is to absorb all the information it contains, we have to admit that we are divided in our opinions.

The advent of the various Milk Boards, the appearance of the Report of the Economic Advisory Committee, as well as the activities of the Agricultural Research Council, have merely assisted in reminding the public yet again of the responsibility which rests on the shoulders of the veterinary profession.

Bills in Parliament may be placed on the Statute Book, official bodies may issue reports, but the responsibility for eliminating tuberculosis from the lower animals—and particularly from the bovine species—is ours. In this way and in this way only can we hope to secure a milk supply about which no doubt can exist.

No one can with truth blame the profession for its failure to achieve this desirable state of affairs for, as is well known, it has never received that measure of support from the legislature which is its due, in spite of resolutions and recommendations which have been made on innumerable occasions. Indeed, adequate advantage has never been taken of the practical application of the good work which has come from research laboratories all the world over.

Hopkins, writing in *The Veterinary Record*, of 1888 (the first volume of that paper to be published) says: "It is quite time that more active steps were taken to prevent the milk from tuberculosed cows being consumed by human beings, and it is one of those things, if properly done, that would materially help to lessen our death rate in infants." Hopkins, a veterinary surgeon, had as a result of his experience come to this opinion 46 years ago and we are still talking about it.

It scarcely matters what disease of the lower animals we may have in mind, the undisputed fact remains that until we are in a position to diagnose accurately that condition we cannot recommend treatment, and similarly when we are dealing with a contagious disease—and particularly one which is transmissible to man—we cannot hope to succeed with any method of eradication. Indeed, early diagnosis is of the first importance.

TUBERCULIN: Tuberculin is the product used for the detection of tuberculosis and is, as it were, a solution of the products of growth of *B. tuberculosis* on any of the known fluid media on which it can with facility be artificially cultivated. There are many different kinds of tuberculin and they are prepared in a variety of ways depending on the particular fancy of the country in which it is used, or on that of the worker whose duty it is to prepare it. It may be dilute or concentrated, and even the methods of concentration are not the same or even standardised. There are some who prefer concentration on the water bath by evaporation, and others who allege that precipitation by the various alcohols or by the addition of some salt is a superior method. The particular alcohol used by its devotees varies, and the nature as well as the percentage of the salt used is similarly variable.

There is no officially recognised standard of manufacture, but even so, in spite of this apparent diversity of opinion as to manufacture, the object in view is the same in all instances, namely, the detection of the pre-clinical case. Therefore we have at least one point in common.

It must be said, however, that all these methods have been designed with a view to increasing the potency of the product and one knows that any of them may be either of high or low potency. This question of potency is all-important since the product used must be capable of producing the desired results in affected beasts.

It is not legally incumbent on any manufacturer of tuberculin to ascertain its potency before issue, and since one knows from experience that no guarantee of such a product can be given without animal tests having been carried out, one also knows that, in the past

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at any rate, there have been tuberculins on the market which were quite useless for the purpose for which they were intended. In this respect alone it will be recognised how much the general practitioner is in the hands of the manufacturer and how lamentable is the position.

In the matter of application there are three main methods in use in this country, namely, subcutaneous, ophthalmic and intradermal, and of these there are certain modifications which have resulted from further investigation.

In America the single intradermal method is used, the site chosen being the caudal fold or vulva, whereas in this country for the double intradermal method the side of the neck is the site preferred. It is not my intention to discuss any of the other methods which have from time to time been recommended, and I propose to confine my attention to the three main methods in general use here at home.

The Subcutaneous Test has been in vogue in this country for many years and indeed held full sway until the advent of the double intradermal test. Whilst the subcutaneous test is reliable as a test there are certain objections which cannot be overlooked. It cannot be used with any degree of accuracy on young stock which have not been handled. It is necessary to have the animals housed and tethered for some time before its application and during the whole period of the test. As is well recognised, this has always been very strongly objected to by owners because usually a diminution of the milk yield has resulted, and it has also been said with considerable truth that some days must elapse before the animals return to normal in this respect. To a commercial herd this is an exceedingly important matter. A further objection is that many things may send up the temperature during the test, and such a happening may well cause some doubt to arise in the mind of the person conducting the test. Again, there is not the slightest difficulty in preventing a rise of temperature in an animal which is affected with tuberculosis and doping was all too common in days gone by, and indeed can still be practised by unscrupulous persons. Advanced cases of tuberculosis do not always react to the subcutaneous test. The inconvenience caused to the practitioner by the necessity of taking temperatures day and night is yet another objection which can be properly raised, although it must be added with regret that on occasions the recording of night temperatures has been left to stockmen and others.

Ophthalmic Test: I think it is agreed that this test is unreliable. It has been described as the least reliable of all the tests and in spite of this it has been recommended as being one that could be used by way of confirmation of others. It has always appeared to me as illogical and contradictory to make use of a method which is recognised as being unreliable, as a confirmation of another which is admittedly more reliable.

The Double Intradermal Test is the test which I consider the most reliable and the one which, from the point of view of practicability, should receive a greater measure of support than the previous two tests to which I have referred. You are all well acquainted with the technique which is recommended and doubtless you are similarly aware of the method of interpretation. It can be applied at any time to animals of almost any age and it is unnecessary to keep animals in while under the test, and the results are—in my opinion—unmistakable in the vast majority of cases. One of the features which, in addition to the others I have enumerated, commends itself to me is the fact that the interpretation of results is a matter for expert veterinary opinion. In other words, it is not the province of the layman, however able an agriculturist he may be, to decide what is and what is not a diffuse swelling—that is the duty of the trained veterinarian. Even so, some veterinary surgeons have in their criticisms made this their sheet anchor and have admitted that the difficulty of interpretation is the main stumbling block to the efficacy of this test.

It is indisputable that there are supporters and opponents of all these methods of testing; in other words, not one of them has been found to be 100 per cent. successful in practice. It cannot be too strongly urged that if perfection is being sought—and the present lack of perfection is the cause of a somewhat hysterical desire for a change or an improved method, which is to be found in some places—then we are seeking the unattainable.

There has been expressed from time to time a doubt as to whether or not the double intradermal test—the officially recognised test of the Ministry of Health—is reliable, and I have heard some say that they do not care to recommend it. What are the reasons for this state of affairs? I have three suggestions to put forward and they are as follows:—

(1) It is not sufficiently realised that nothing in this world is perfect and that even tuberculin, concentrated or dilute and applied in whatever manner you wish, has never been claimed to be an infallible agent of diagnosis. Let us get that in our minds and we shall at once realise, I think, one important cause for spoken dissatisfaction with an exceedingly valuable product.

(2) The appearance in print of experiments and results of observations which, by their very absence of informative detail and relevant data, render them unacceptable and valueless, yet

they are not infrequently referred to in publicly ventilated opinions as works of importance.

(3) Unfair criticism of good work.

Doubtless there are other reasons, but these will suffice in that they account in some measure for the present state of doubt in the minds of some practitioners to-day. I will take these causes in the order in which I have listed them:—

(1) Tuberculin (the term is used in the general sense) is admittedly the most valuable —indeed the only—product we have by means of which early diagnosis of tuberculosis is possible. There are, in my opinion, three main reasons for its occasional failure to produce positive reactions in tuberculous animals, namely, (*a*) tuberculin of low potency, (*b*) improper or careless application, and (*c*) individual idiosyncrasy of some animals which do not develop an allergic state as soon as the majority.

(*a*) Tuberculin of low potency. It is, in my view, only possible to deal with this important phase of an important subject by legislation and, as you all know, the veterinary profession has agitated for many years for this to be done. It should be made compulsory for manufacturers to issue only products of the highest potency, established by animal experiment, and a signed statement to this effect issued with every package. It is well known that there are on the market to-day several brands of tuberculin whose potency level is so low that the best results one can expect are doubtful reactions. If every practitioner in the country refused to use tuberculin which did not possess such a guarantee, and this action were combined with concentrated and vigorous effort on the part of our governing bodies, there would soon be a change.

(*b*) Improper or careless application. It is quite unnecessary to say anything under this heading because it will be apparent to all of you that such technique cannot be considered.

(*c*) Individual idiosyncrasy. It is well known that many tuberculous animals do not react as satisfactorily as others. The explanation for this state of affairs is yet to come and we are not yet in possession of one which can be regarded as satisfactory. It is, nevertheless, a point which should be borne in mind, but at the same time it may be added that the percentage of such animals which one would encounter is probably small.

(2) Editors of periodicals to whom records of cases are sent should refuse point blank to publish if those case records fail to establish the points which the author wishes to make. It is not only useless but definitely dangerous for the author of a paper to express the view that this or that method of diagnosing tuberculosis is unreliable unless there are recorded all the details which have led the author to arrive at such a conclusion, for without such data no one is entitled to agree or disagree with his verdict.

(3) Unfair criticism. This type of comment is fortunately very rare, but its danger will be obvious to everyone. It so happens that there is one publication which in my view comes under this heading, and it made its appearance in 1925 in *The Journal of Comparative Pathology and Therapeutics.* The article in question purported to be a review of the Report of the Medical Research Council on the double intradermal tuberculin test but it has so far received little attention. One comment made runs as follows:—

> "In order that readers may form a correct idea of the simplicity of the procedure, a little amplification of this bare time-table is necessary. As the immense majority of the cows in this country are housed animals, each accustomed to its own stall and, when not at pasture, fastened by the neck with a chain, in carrying out the operation appropriate to each day every animal will have to be unfastened, turned round in the stall, and forcibly held so as to render the neck practically immobile. Two, and in many cases three, persons will be required for this purpose."

This comment was made in 1925 before, indeed, the test was very well known. To-day when the test is much more common and has been in use for nine or ten years I will wager that not a single practitioner has found it necessary to adopt the ridiculous procedure advanced in this article. Again, the following statement occurs:—

> "In young animals (for testing which the Committee think the intradermal test will have special advantages) the entire thickness of the skin may not exceed 2 m.m. or one-twelfth of an inch."

The reader is not told what he is to infer from this, but one must assume that what is meant is that difficulty will be experienced in making an intradermal injection into skin of this thickness. Is there anyone here who will tell me that he cannot perform this operation; that, having tried to do so, he has failed?

It has been said that there was no need to introduce the double intradermal method of testing and that the subcutaneous test was sufficiently reliable. One must assume therefrom that the representations which were made by well-known landowners and agriculturists in 1921 that "there was urgent need for further and better investigation of the value of the

familiar tuberculin tests in cattle" were either premature or unnecessary. These representations were made to the Ministry of Health, who referred the matter to the Tuberculin Committee of the Medical Research Council, appointed for the purpose of studying matters quite unconnected with tuberculin tests in cattle, and the Medical Research Council requested the Committee to consider the points raised "in view of the grave importance of these observations to the health of the population." An undeniably proper procedure. The Committee, having made enquiries, found that the difficulties which had been advanced were "shared by many other stockowners and that there had been no recent investigation of the value of tuberculin testing as ordinarily used in this country."

The Committee willingly included the subject in their programme but "before re-investigation of these problems in cattle was begun . . . officers of the Ministry of Agriculture and Fisheries who were informally consulted *expressed their interest in the proposed research but did not desire to be directly represented on the Committee*" (and presumably offered no advice). This is a quotation from the Introduction to the Report issued by the Committee in 1925 and as it is obvious therefrom that the members of the veterinary profession included in that Department of the Ministry at that time were cognisant of the proposal and had an opportunity of sitting on the Committee, it is important that this should be remembered in the light of what will follow. It cannot surely be said that even in 1922 the Ministry of Agriculture could not view the subject of tuberculin testing as a matter of some importance.

The Committee were therefore deprived of the knowledgeable opinions of these officers but were nevertheless committed to a consideration of the problem. They did the best they could under the circumstances and added to their numbers the Professor of Agriculture in the University of Cambridge (the late Professor T. B. Wood), Professor J. B. Buxton, and others who were interested in the purely agricultural aspect of the problems involved. The Committee soon found after a thorough search that apart from the Royal Commission on Tuberculosis (Part II, Appendix by Dr. L. Cobbett and Dr. A. Stanley Griffith) and a few papers in veterinary periodicals, very few significant observations had been published on the subject in this country and this statement has not, so far as I am aware, yet been challenged.

As for the Report itself and in so far as the actual carrying out of the tests and *post-mortem* examinations is concerned, they were without a single exception conducted personally by veterinary surgeons, some of them with much experience.

As a result of some nine years of experience of this test in the field we have had reports of failures as well as of successes. I have spoken to several large stockowners who, until the advent of this test, were in the habit of testing their animals by the subcutaneous method, and all those with whom I have spoken are of one mind that as a test the double intradermal method has advantages not possessed by the subcutaneous, and it is consequently much preferred.

It is surely not denied by even the most bitter opponents that it is an advantage to be able to test young stock, and this is only one point in its favour. It is unnecessary to keep animals in the byres or to withhold water from them while undergoing the test, and it is not necessary to have each animal held in such a way that it is immobile, as was stated in the criticism referred to. It was made clear by the Committee that the double intradermal test was not in any way original, for the work of Danish investigators was well known to the Committee and it should be known that the Committee did not advocate the second injection merely for fun or in order to be different from other people who make use of the intradermal method of testing. It was ascertained by the Committee that when one injection only was given the reaction was in some cases such that the animal might have passed the test, whereas when the second injection was made the reaction was more definite and permitted of the animal being placed in the proper category. There is, of course, no need to give a second dose of tuberculin as a routine procedure in animals which give a definite response to the first, and it should be given only to those animals which are either negative or doubtful at the first injection. That a second injection is necessary is shown by the fact that in approximately 5 per cent. of positive reactions there is little or nothing to show after the first injection.

As far as I have been able to judge, the criticisms of the test are very one-sided in that it is claimed that positive reactions may occur in animals which are subsequently ascertained not to be tuberculous. That accusation was not often laid at the door of the subcutaneous test, but rather that infected animals failed to respond—a much more serious business. If the facts are as stated, and there is no suggestion that failure to produce a reaction in a tuberculous beast by means of the double intradermal test occurs with undue frequency, I submit that we are on fair ground, since we are saddled with the responsibility of freeing the herds from tuberculosis and it is surely preferable to condemn one reacting animal which is free of the disease than fail to condemn one which is, in fact, tuberculous.

The no-visible-lesion reactor, about which so much comment has been made, is almost invariably met with in herds which have been regularly tested and in which infection is therefore recent and possibly slight at the time of the test. Nevertheless, there are persons who expect to find visible lesions in ALL reacting cattle no matter what the stage of infection may be.

Whatever may be said against the test, against the investigation as it was carried out, or the men who carried out the work, it must at least be placed on record that at no time in the veterinary history of the country has an investigation been carried out with such thoroughness or with such care.

Let it not be thought from what I have said that difficulties do not arise during the carrying out of this test. Everyone who has had experience of it would at once deny such a statement, for they are well aware that the converse is the case.

The technique is one which requires practice as well as the application of powers of observation and a close study of the results obtained in different animals and different breeds. I am not prepared to accept this as an objection to the test, for the reason that it applies to the majority of operations carried out by the veterinary practitioner and it would be a sorry position if we had to turn down methods of procedure, operation technique, etc., merely because they were difficult. It is the business of the veterinarian to make himself proficient in the work he is asked to carry out.

One of the principal and accepted difficulties which arise in connection with the carrying out of the double intradermal test is that which is encountered in animals with normally thick skins possessing an unusual amount of subcutaneous tissue. Bulls are an outstanding example and there is one breed of cattle particularly which has this peculiarity, namely, Herefords.

It was in 1922 that I first used this test and although, as is to be expected, no difficulty was experienced in the actual injections, I recall having a doubt into which category the tested animals should be placed. This was due to lack of experience, but when I had completed the test on two or three herds I considered myself proficient and certainly had developed considerable confidence. I was fortunate in securing the good-will and active co-operation of a few farmers in my district and was able to arrange for a careful *post-mortem* examination of both reacting and non-reacting cattle. In those days I was in general practice and had no hesitation in deciding that from a practical point of view the double intradermal test possessed advantages which placed it high up in my estimation, was superior to the existing methods, and with time and further experience this opinion has become a conviction.

It must not be thought that the few who have reported adversely on the double intradermal test represent the full body of public veterinary opinion, for this is not so. A Special Report published in 1928 entitled "The Intradermal Tuberculin Test in Cattle—Collected Results of Experiences"—by J. Basil Buxton and A. Salisbury MacNalty, goes to prove the opposite. This Report gives in some detail the result which followed the despatch of a comprehensive questionnaire to 100 practising veterinary surgeons who were known to be using the double intradermal test. Seventy-seven replies were received, of which two were unsigned, and a list of these gentlemen is given on page 9 of the Report. Basing their conclusions on the opinions of these 77 men of experience, the authors concluded that the double intradermal test is found to be a reliable test for the detection of tuberculosis in cattle and "this view has been confirmed by the results of *post-mortem* examinations of tested animals; for example, out of 835 animals which had shown no reaction to the subcutaneous test, 122 reacted to the double intradermal test and 94 of these reactors proved tuberculous at autopsy. No autopsy was made on the remaining 28 animals."

I have already taken up more of your time than I should have done and all I desire to say now, by way of conclusion, is that it is imperative for the veterinary profession to be unanimous in the matter of tuberculin testing. Practitioners must cast the vote which, to be of any value, must result from considerable experience, careful observations and an intelligent application of the principles which in general govern all work of a scientific nature.

The comments which I have felt it my duty to make regarding criticisms which have made their appearance are the result of twelve years' intensive study of the problem, coupled with much field experience. In addition, they are based also on the opinions which have been expressed in correspondence with me by veterinary surgeons in general practice.

It may be added that the double intradermal test for Johne's disease which I introduced to the profession in 1928 was elaborated because of my faith in the double intradermal tuberculin test. Since its adoption by over 200 veterinary surgeons I am satisfied that as a method it is sound but, of course, by no means infallible.

There are difficulties, but because of their existence it is not proposed to discard the method but to face them with a determination that they shall be overcome.

Discussion

The discussion was opened by Mr. F. Beckett, F.R.C.V.S., in the following terms:—

I would first congratulate Major Dunkin on his paper; it must be obvious to all of us that in him the double intradermal test has an enthusiastic and worthy champion.

His suggestion that the various Milk Boards, the Report of the Economic Advisory Committee and the activities of the Agricultural Research Council have reminded the public yet again of the responsibility which rests on the shoulders of the veterinary profession is interesting; but had he suggested that the profession was to be made the scapegoat in the event of failure, I would have been in complete agreement. To my knoweldge, the veterinary profession has never had the power to assume responsibility.

When Government and other committees are formed with the object of investigating diseases of the domestic animals, they appear to be largely composed of laymen and if a veterinary surgeon is appointed, it is highly probable that the member suggested will be one who has had comparatively little to do with the diseases under consideration.

To my mind, it is high time the veterinary profession assumed the responsibility for the control of animal disease, and I feel sure that we have plenty of members willing and courageous enough to undertake the work—but first cut out the humbug and give us the opportunity to tackle the problems.

When giving consideration to the problem of tuberculosis, it is essential that we keep our sense of proportion; so much publicity has been given to this subject and this publicity has taken such a form that I feel certain that the general public believe that infection by the bovine type is by far the greatest if not the only source of infection. It is well to keep in our minds the fact that, after all, bovine tuberculosis plays only a secondary rôle in the dissemination of tuberculosis in man; in this connection I would suggest that if certain of our medical confrères paid greater attention to better housing and hygienic conditions for the masses and left the eradication of bovine tuberculosis to the veterinary profession, they would be doing much to help the human aspect of the problem. I would not have you believe from these remarks that I underestimate the risk of infection by the bovine type, because I am fully aware of its dangers, particularly to children.

Calmette states that up to 10 per cent. of all cases of tuberculosis in children in France are caused by the bovine strain of the organism, and that distinguished British worker Dr. Griffiths stated at the National Milk Conference in 1922 that the infection by the bovine type was highest in children under five, and that 80 per cent. of the cases of tuberculosis in children under this age was due to the bovine strain.

I make these remarks because we also have a duty to perform to our farmers, as their livelihood in many cases depends on the sale of milk; for this reason the case must be put fairly and the public not unnecessarily frightened. It is common to hear the opinion expressed that at least 40 per cent. of the cattle in the country would react to the tuberculin test, but it is equally true to state that probably 80 per cent. of the human race would show tuberculous lesions on *post-mortem;* further, that the majority are due to infection by the human type.

The cows most dangerous are those passing tubercle bacilli in the milk and those suffering from a chronic cough as a result of infection by this organism; this is nothing like 40 per cent.

As I have no practical knowledge of the production of tuberculin, I do not propose to discuss it beyond stating that it is my opinion that it should be standardised and the sale restricted to members of the veterinary and medical professions.

My experience of the use of tuberculin by enlightened stockowners has been unfortunate, particularly in one case. I tested five cows for export by means of the subcutaneous method and rejected three animals—two as definite reactors and one as doubtful. The owner was exceedingly upset and informed my client that he had tested his animals and had 100 consecutive passes. The Royal Veterinary College and the Ministry of Agriculture were consulted by him, and in the end the animals were retested by another veterinary surgeon, this time by the intradermal method. Two again failed and the doubtful animal gave a negative reaction. So much for home testing.

As the great majority of veterinary surgeons appear to consider the ophthalmic test unreliable there is no virtue in discussing it.

I find an expression of opinion as to the relative values of the subcutaneous and intradermal tests extremely difficult, for in spite of the fact that I have applied the tests to considerably more than 20,000 animals, the number of animals upon which I have been able to make a *post-mortem* examination has been so very small that I am almost completely in the dark as to the accuracy of either of the tests.

One cannot deny that the double intradermal test has certain very definite advantages over the subcutaneous method, but at the same time it may be said with justice that these advantages are those of convenience and averting a temporary fall in milk; but as far as accuracy is concerned there is little to choose between them. I believe the reason why the subcutaneous method is sometimes blamed for failure is because far too small a dose is used.

I tested some 200 cattle, within a short space of time, for export, by means of the subcutaneous test; these were again tested at the port of exportation and later in America. Of these, only one animal failed to pass the test on arrival abroad and this animal was tested twice by the intradermal test before being condemned. The *post-mortem* examination, so I was informed, revealed a tuberculous lesion in the hock. This experience gave me considerable faith in the subcutaneous method of testing.

I believe that the interpretation of the intradermal test is the crux of the matter. Major Dunkin states that he is not prepared to accept this as an objection and suggests as a reason that it would be a sorry position if we had to turn down methods of procedure, operation technique, etc., merely because they were difficult, and that it is our business to make ourselves proficient. I submit that he must accept this objection, as his argument against it appears to me to be faulty—the method is not objected to on the score of its being difficult but because of the different interpretations arrived at by equally proficient men, thus making it unreliable—a vastly different thing.

Major Dunkin will probably remember some years ago examining some cattle in connection with the intradermal test for Johne's disease; 40 cattle were examined and we could not agree over the reaction exhibited by two animals. He considered them positive and I negative. Two other veterinary surgeons were present and while one seemed loath to express an opinion, the other agreed with me.

While I have the greatest admiration for Major Dunkin's abilities and his proficiency cannot be questioned, I contend that any test that can cause such a sharp division between experienced workers must be unreliable.

May I say that I am in complete agreement with him in the views he expressed concerning the publishing of opinions unsupported by reasonable data—but regret that this appears to be contradicted later on where one finds the "Report on the Intradermal Test in Cattle—Collected Results of Experiences." He discusses the replies received from 77 practising veterinary surgeons following the despatch of a questionnaire. I was one of the 77 and at that time could find little more to say than that the test was useful in young stock. How some of the gentlemen who replied stating that the test was 98 per cent. accurate, arrived at their conclusions, I am at a loss to understand. If, as Major Dunkin states, the authors based their conclusions on the opinions of these 77 members, then I am afraid that they were building their house on sand.

The work and figures issued by the various laboratories I accept, because it has been my experience that they never give an opinion without its being fully supported.

In conclusion, while I am of the opinion that the double intradermal test is—taking it all round—the best available at present, the time has now arrived when serious efforts apparently are to be made to eradicate bovine tuberculosis and I cannot believe that we are seeking the unattainable when we ask for a test more conclusive and at least as accurate as the double intradermal test.

The President (Mr. J. F. D. Tutt) having announced that the paper was open for general discussion,

Mr. H. S. Caldwell spoke of the enjoyment he had derived from the paper and observed that there was just one point upon which he would like information and that was in relation to reactors in free herds. People who had got clean herds would presumably have a similar experience to that in America: they would still have reactors and in the cleaner herds they would be no-lesion reactors. The result would be to penalise the producers of clean herds when the chances were they were not real reactors. He also wished to say how much he appreciated Major Dunkin's opening remarks: if the public were led to believe that 40 per cent. were reactors they would be given a wrong idea. In some districts herds were fairly clean and it seemed a pity for statistics applicable to the worst part of the country to spoil the credit of herds in general.

Captain J. C. Coleman, in response to an invitation from the President to continue the discussion, said he wished first to thank them for inviting him to the meeting and he also would like to thank Major Dunkin for the very excellent paper he had given them. It was always a pleasure to listen to him because he gave them such concise papers, which they could digest. With regard to the subcutaneous test, he was one of those who believed that with reliable tuberculin it was as reliable as any other test they knew of at the present moment, for a primary test. How soon animals became immune to it he could not tell them, but he had experimented with about 40 cows, all of which passed the subcutaneous test on several occasions, and when he first used the intradermal test—he was one of the 77 alluded to by Major Dunkin—he used it simultaneously with the subcutaneous test. All reacted to the intradermal test but they did not react to the subcutaneous test, although some reacted at later periods. He had an opportunity of following 80 per cent. of these to the slaughterhouse, and he had records of a large number of the remaining 20 per cent. They all showed lesions of tuberculosis, some to a very large extent. For that reason he had concluded, for many years now, that there was a time when a cow might become immune to reaction to the subcutaneous test although still affected with tuberculosis.

With regard to the intradermal test, he would have been glad if Major Dunkin had explained rather more definitely the technique of the operation. Major Dunkin was much more modest than he was himself: he was sure a large number of the errors in diagnosis which were occurring, were solely due to the men not having been properly taught the technique and the correct reading of the reactions. Demonstrations at meetings were worse than valueless: there were so many variations, of which they saw very few at demonstrations. The only way they could possibly learn the test was to be shown how it was done by someone who was an expert,

and to do it oneself, and then follow the tests to the slaughterhouse. By that means, if they were observant and took notice of any variations in the swelling, they would be better able to come to a correct conclusion. It was the character of the swelling that would enable them to decide whether the swellings were reactions or not.

The necessity of having tuberculin standardised was, he thought, beyond question. If they would refer to the reports of the University of Cambridge Institute of Pathology for 1932—it would pay them to get that report and read it—they would find a lot about these tuberculins. He believed he was right in saying that a number of tuberculins could be precipitated and it was the medium in which it was suspended which made them what they were. In a large number of cases—possibly 60 per cent.—one could read the reactions at the first inoculation, but it was necessary to give those that did not give a definite reaction a second dose. It was, however, the technique of the whole thing and the correct reading of the swellings that came afterwards that was important, and he was afraid a large number of those who did the test were not really conversant with these. With regard to the position in which the tuberculin was to be put, he would like Major Dunkin to tell them what was the proper position in which to make the injection. He would also like to know whether he approved of the syringe generally in use—that large dental syringe. He obtained one, but he found it impossible to use it; it was not delicate enough for him. He also had a small electric lamp which he attached to his forehead and which he found greatly facilitated the making of injections in cowsheds, which often were none too light.

Mr. C. Tyler stated that he had found Major Dunkin's paper very instructive indeed. "What I appreciate almost as much as the evident knowledge behind it," he observed, "is his sweet reasonableness. When he said the test was not 100 per cent. infallible I knew I should like him." (Laughter.) Mr. Tyler went on to say that, in his opinion, the subcutaneous test had suffered from ill advocacy. It suffered from all the drawbacks pointed out by Major Dunkin in England, and in South Africa it was impossible to put it into operation owing to the climatic conditions. Standardisation of tuberculin was a very pressing necessity. Not only did the various tuberculins vary, but even those obtained from the same source seemed to have different degrees of potency, which variation, when one was not ready for it, was apt to be disturbing. When one tested cattle and got a negative reaction, one could never say the diagnosis was right, because one did not have a *post-mortem*. He did not agree that there was anything very wonderful about the technique of the double intradermal test. There was a right and a wrong way of doing anything, but any veterinary surgeon, if he used his ordinary powers of observation, could get into it in no time. The actual injection was perfectly easy, and he did not believe the particular part of the skin where it was made mattered very much. To say that it was better to kill a beast that was not tuberculous than to pass one that was, was all right, but when the general practitioner had a client with valuable cattle it was going to be a serious matter for that client unless he got much higher compensation than was obtainable at present. Personally, he would never destroy a valuable beast until it had given a second reaction.

Mr. J. B. White said he would like to ask, in view of the regulations that had come down about the attested herds scheme, whether Major Dunkin thought the goal was attainable and was the scheme a practical one? Personally, he did not see what was wrong with the present Grade A (t.t.) milk. He granted that the tests had not been used as well perhaps, as they might have been, but that was because they had not had enough experience of the test, and possibly had not been using it correctly. With regard to the new synthetic tuberculin, he thought it was exact enough, but for anybody who had not had a lot of experience with it, there was the disadvantage that they did not get the decided reactions they had with the old tuberculin and so might be misled.

Dr. W. Scott, speaking as a visitor, said he felt honoured by the President's invitation to him to make a short contribution to the discussion. He agreed with Major Dunkin that the standardisation of tuberculin ought to be systematised, and now he had raised the point he would like to ask him if he could suggest any tuberculin on the market that he would like to condemn. (Laughter.) Major Dunkin had said he was opposed to the ophthalmic test, and up to a point he was right, but he did not think the essayist ought to have been quite so sweeping. He himself had in many cases had reactions which had been satisfactory. Another question he would like to put was how a veterinary surgeon could estimate the potency or otherwise of the tuberculin he was using. Every animal had its own special characteristics and there was a large element of inexactitude in all these tests which they must consider, and they must pool their results in order to arrive at a satisfactory conclusion.

Mr. W. F. Maynard expressed entire agreement with Major Dunkin's statement with regard to the ophthalmic test: it was not of much value. The subcutaneous test was better, but the test to-day was the intradermal: he thought this 90 per cent. correct.

The President joined with the previous speakers in congratulating Major Dunkin on his paper. He agreed that the intradermal test, as judged by results on *post-mortem* examination was the most reliable, the subcutaneous next and the ophthalmic test least. With regard to the difference of opinion to which Mr. Beckett had referred, he thought that arose from the difference in the interpretation of the reactions. Too much stress was put on heat and pain. Further, he thought too much attention was paid to the measurements. With regard to the thickness of the skin in bulls, he thought that could be overcome if one made the injection behind the shoulder blade. He always used the dental syringe himself and he did not think there was much difficulty about the technique.

Mr. B. Gorton remarked that Mr. Maynard had said the intradermal test was 90 per cent. correct, but one could only say that when one had conducted a *post-mortem* examination on every animal tested. Some of them had killed animals that had reacted, and had found them quite free.

Dr. Scott asked if it was not possible that there might be microscopic lesions involved in these cases. He once tested a herd and found three definite reactors and one border-line case. He got a letter from the Ministry advising that the latter should be tested again two months later, but looked at from the agricultural point of view, it was rather hard on the farmer to have to wait two months. Would not a month as the outside limit be sufficient?

The Reply

Major Dunkin, replying to the discussion, said he was very pleased that what he had said had aroused so much interest, but he was not altogether surprised because he knew that in that part of the country it was a subject which was of great importance to their profession. One of his great pleasures that afternoon was to know that his old friend Mr. Beckett was to open the discussion, as they had had many tussles on this subject in the past. (Laughter.) Mr. Beckett's first point was a political one. He told them that the veterinary profession had never had the power to carry out these schemes. He (Major Dunkin) did not agree. The profession had had the power but they had not had the right men to lead them. They had been frightened: that was the whole trouble. But he did hope there was going to be a change in the future and that the inferiority complex which had assailed their leaders in the past would stop. He agreed they must not frighten the public in their efforts to clean up herds and he did not want to suggest that for a moment, but that did not alter the fact that tuberculosis was a disease of cattle communicable to human beings and it was the duty of the profession to get right up to it whether they frightened the public or not. He could not gather whether Mr. Beckett favoured the intradermal test over the subcutaneous test or whether he frankly disliked it. He said the intradermal test was the best available, but he held that the subcutaneous test was a reliable one, provided the tuberculin was reliable, and it was used by a man who knew his business and under proper conditions. It did not make a test unreliable because four men using it disagreed. It was not unusual for veterinary surgeons or other professional men to disagree on certain points. He could not accept Mr. Beckett's references as a criticism of the test, but Mr. Beckett had had the courage of his convictions.

Mr. Caldwell had referred to no-lesion reactors. The case of the no-lesion reactor was perhaps one of the most difficult with which they had to contend. It was possible, of course, to get a positive reaction, and on making a *post-mortem* examination to find nothing. It was quite possible, too, that they might not find anything when making a microscopical examination. They must admit that cases of that sort were unsatisfactory, but nevertheless they existed and they had got to face the fact. They were not a high percentage however and there were explanations. For example, if one carried out the test at a spot too close to that which had been used previously one might get a reaction which could be considered positive. That was one of the things the practitioner had to guard against. He had got to base his conclusions on the result of the test he himself had carried out.

Captain Coleman seemed surprised that he (Major Dunkin) had not explained the technique of the operation more precisely. He had not done so because he thought they all knew it. He did not think there was any real difficulty about it. When one had done a dozen or so one should be fairly proficient. The interpretation of what resulted was, however, the important thing, and such a lot had been said about that that he hesitated to say much more. With regard to the actual injections, he thought one got better reactions when the injection went fairly deep into the derma. He quite agreed that the swellings obtained from the synthetic product were smaller than from the original tuberculin, but that was because foreign proteins were absent. Personally he liked the dental syringe and for this purpose used no other. He had found it both accurate and strong. He found he could get the proper dose in at the right spot; it carried ten doses at a time, the graduations were accurately measured, and when once properly adjusted there was no escape of tuberculin. He was not saying there was no other syringe equally good; that would be stupid—they all had their likes and dislikes, but he liked this syringe.

With regard to Mr. White's question, he would ask him not to press him to discuss the attested herds scheme. He had read it and he was not going to express any opinion about it, good or bad, but like other schemes which had come out he thought it should be given a trial. No one had tried it yet and he thought it would be unfair to attempt to criticise any part of it until it had been given a fair and satisfactory trial.

Dr. Scott had asked how a veterinary surgeon was to know whether the tuberculin was potent or not. He could not know. He was entirely dependent on the manufacturer. There were tuberculins on the market that were quite useless and there were others that were quite good, but he could not give them a list. Sufficient be it to know that they did exist and that he knew some of them. (Laughter.) His comments on the ophthalmic test were considered too sweeping for Dr. Scott. Perhaps Dr. Scott was right, but frankly he did not like it. With regard to the period that should elapse before a second test was made, that had not yet been worked out and a little latitude must be allowed, but it was being studied. Concerning the taking of measurements, he regarded it as desirable because they were the only means whereby one could secure a permanent record of the cases tested. The actual measurements were, from the recording point of view, most desirable. Quite a number of people, he believed, were content to measure alone and pay no attention to the character of the swelling. That of course was quite wrong. He was much obliged for the interesting afternoon they had given him and he hoped that what he had told them would not be considered a waste of their time. (Applause.)

ENQUIRY INTO THE NUTRITIONAL VALUE OF MILK

The chief lines of the above inquiry will be:—

(*a*) The feeding of different amounts of raw or pasteurised milk to children in elementary schools in the following groups: About 2,000 children receiving no milk; 2,000 receiving ⅓ pint pasteurised milk; 2,000 receiving ⅔ pint pasteurised milk; and 2,000 receiving ⅔ pint raw milk. Biscuits will be given daily to the 2,000 children receiving no milk.

(*b*) Feeding experiments on animals, to be conducted at the Rowett Institute, Aberdeen, and the National Institute for Research in Dairying, Reading.

Four full-time medical officers have been appointed to conduct the investigation in elementary schools, which is to be carried out over a period of a year in about five selected areas in Great Britain. The research is confined to places in which the Milk Marketing Board's Milk-in-Schools Scheme has not been generally operating, and the areas decided on up to the present are Luton, Renfrew, and Wolverhampton.

THE SPECIFIC CHEMO-THERAPY OF MILK FEVER BY THE PARENTERAL ADMINISTRATION OF CALCIUM BORO-GLUCONATE*

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Following upon our publication, in 1925, of the parathyroid deficiency (hypocalcæmia) theory, numerous investigators, including Little and Wright, Sjollema, Hayden and Fish and ourselves, have furnished a large volume of evidence supporting the view that an acute hypocalcæmia is the immediate cause of the milk fever attack. The writers have also shown that the curative action of mammary inflation is due to its effect in rapidly raising the blood calcium concentration. In order to obtain further evidence bearing upon this point, it was resolved to test the curative effect of the parenteral injection of calcium in cases of the disease.

Inorganic salts of calcium, such as the chloride, when injected subcutaneously, are notoriously caustic, but a comparatively bland preparation of calcium was found in the gluconate $(C_5H_{11}O_5COO)_2Ca$. (Sandoz). An unforeseen obstacle was, however, encountered in the reluctance of veterinary practitioners to experiment with a hitherto untried treatment, when one of almost specific efficacy, that of mammary inflation, was in their hands. After considerable difficulty, we, however, eventually obtained the services of a firm of insurance agents who were prepared to effect a special form of insurance to cover the value of cases of milk fever experimentally treated by calcium therapy.

The results of the first group of experiments proved that cases of milk fever made a rapid, even a spectacular, curative response to the injection of calcium gluconate, given either by the intravenous or the subcutaneous route, provided that an adequate dose were administered.

In these experiments, widely varying amounts of calcium were injected, and it was ultimately determined that two ounces† of calcium gluconate could be regarded as the "standard dose." By the term "standard dose" is implied that dose upon which reliance may be placed in the treatment of all cases of milk fever in the cow. In a considerable number of cases the blood calcium concentration may be relatively high, *e.g.*, 6 mgms. per 100 ml. serum; in such instances, 1 ounce, or even less, may be sufficient to effect recovery. On the other hand, the calcium content may be as low as 3 mg. per 100 ml. serum, in which case the administration of any amount less than 2 ounces of calcium gluconate may prove inadequate. Since there is no clinical method by which the practitioner can readily determine the blood calcium concentration which obtains in a particular case, and as the administration of an excess amount of calcium is harmless, it is proper that he should administer a standard dose upon which he can always with confidence depend.

The standard dose having been determined, one of us was responsible for urging the extensive adoption of the new treatment, since it apparently possessed several advantages over mammary inflation. A comparatively small number of practitioners elected to employ calcium therapy by the intravenous method of administration; these reported almost invariable success, although, in a number of instances, very rapid recovery was followed by relapse. In the majority of cases, the subcutaneous route was adopted and, while by this method a rapid and complete recovery was almost without exception effected, a number of practitioners reported that, upon occasion, such untoward complications as subcutaneous œdema, abscess formation, and even extensive necrosis, developed at the site of injection.

These occurrences occasioned grave concern, since they not only constituted a serious obstacle to the general adoption of the treatment, but, in several instances, they proved detrimental to the reputation of the practitioner. Such a condition of affairs obviously demanded careful investigation, and reports received from many practitioners in Europe and America were collected and carefully collated, and the techniques employed by practitioners who seldom, if ever, encountered local reactions were compared with the methods of those whose experience was of a contrary character.

It was soon apparent that the subcutaneous injection of calcium gluconate at concentrations higher than 5 per cent. was undesirable, in that its use increased the risk of serious local reaction. This required that, in order to introduce safely the requisite dose (2 ounces) of calcium gluconate, it was necessary to inject subcutaneously at least 2 pints of solution. Hepburn found that even so large a volume of fluid was readily absorbed if it were in-

* Translated with Special Permission from the *Medlemsblad for Den danske Dyrlaegeforening. March*, 1935.

† The word ounce, as it occurs throughout the text, refers to the ounce apothecary, *i.e.*, 480 grains.

jected at a temperature of 115°F.—a procedure which, however, frequently incurred considerable inconvenience under the conditions which obtain on the farm.

Experimental cattle were injected subcutaneously and intramuscularly with solutions of calcium gluconate in excess of 10 per cent. concentration, prepared and administered at the Moredun Institute under strict aseptic precautions. The results of these experiments indicated that such local reactions as were encountered were due not to septic infection but to precipitation of the salt at the site of injection. Strong aqueous solutions of calcium gluconate are supersaturated and, therefore, very unstable, and so tend to precipitate readily. It was found that if solutions were filtered immediately after their preparation, the risk of precipitation appeared to be reduced, but, since solutions could not be prepared in bulk, the preparation of a hot filtered solution for each individual case involved considerable trouble and inconvenience.

At this time, a number of specially prepared solutions of calcium compounds for the treatment of milk fever were produced commercially. These solutions were of comparatively small volume, and were prepared in such a form that they could be administered with facility, but their general use was precluded for one or other of two reasons, *i.e.*, either they were too costly, or their content of calcium element was quite inadequate, and so they were of no value other than as relatively unimportant auxiliaries to mammary inflation.

The position, then, was that while we had definite and abundant evidence that the parenteral injection of calcium gluconate was a treatment of specific curative efficacy and one which appeared to possess several distinct advantages over mammary inflation, its employment involved either considerable expense in the purchase of specially concentrated solutions, or it required much care and trouble in the case of solutions prepared extemporaneously. The difficulty has been resolved by the discovery by Hayden that a solution of boric acid is a powerful solvent for calcium gluconate. The addition of this substance readily renders soluble concentrations of even 40 per cent. of the salt, while 20 per cent. solutions can be kept for many months without precipitation. This knowledge now permits us readily to prepare stock solutions, which can be kept until required for use, and the individual injections may now be markedly reduced in volume. Subcutaneous injections of calcium gluconate solutions in combination with boric acid are rapidly absorbed without trace of local irritation. Further, it has been shown by laboratory tests which we recently have had conducted that the addition of boric acid renders the injection relatively antiseptic. One of us, therefore, suggested the following formula for use as a subcutaneous injection in the treatment of milk fever:—

Calcium gluconate	ʒii
Boric acid	ʒiii
Water	ʒxii

The solution is boiled, but need not be filtered.

This is now being largely adopted in general practice in Great Britain and abroad, with uniformly excellent results.

The solution is, with advantage, injected at a temperature of 105°F., but, since the volume of fluid is relatively small, it will be found that in actual practice, the solution need not necessarily be warmed, although a warmed solution is much more readily absorbed.

Since the solution is stable, it may, as has been indicated, be prepared in bulk, and this removes the troublesome necessity of preparing a solution for the treatment of each case to which the practitioner is called. Fungal growth in stock solutions may be prevented by the addition of a few drops of a 10 per cent. solution of thymol in alcohol.*

It is hoped that it may soon be possible to obtain "calcium boro-gluconate" as a therapeutic product. Two to 2½ ounces of this substance dissolved in 10 to 12 ounces of warm water forms a treatment ready for immediate administration.

The Nature of Calcium Boro-gluconate

When calcium gluconate is dissolved in a solution of boric acid, we have reason to believe that there is formed a new chemical compound, for which, in the absence of precise information regarding its structure, we suggest the name "calcium boro-gluconate." We have found that when the calcium boro-gluconate solution is evaporated to dryness, the residue obtained differs from either of its components both in its appearance and in its physico-chemical properties. It also differs in these respects from the product resulting from the mechanical mixture of the two. Calcium gluconate is a fine, white crystalline substance which, when subjected to strong heat, swells up to about twenty times its volume while charring. On the other hand, calcium boro-gluconate consists of coarser crystals readily exhibiting cleavage on mechanical pressure. On heating it decrepitates strongly and exhibits only a moderate degree of swelling while charring. Further, the identity of the boric

* It has now been found preferable to use a 25 per cent. solution of thymol in alcohol (90 per cent.); two drops being added for each three ounces of the stock solution.

acid seems to be lost when tested for by the flame reaction. When the compound, either in the form of the crystals or in a finely powdered condition is ignited, no trace of green colouration can be detected in the flame; whereas, a finely titurated mechanical mixture of boric acid and calcium gluconate, when treated in the same way, gives the characteristic green colour of free boric acid.

Calcium gluconate is soluble in water 1 in 30 at 15°C., and 1 in 5 at 100°C. The boro-gluconate shows a solubility in water of 1 in 1 at 15°C., and 2·8 in 1 at 100°C. The reaction of the gluconate solution is pH 6·0, whereas that of the boro-gluconate is pH 3·7.

Comparative Merits of the Intravenous and the Subcutaneous Routes of Administration

By injecting calcium compounds directly into the circulation, a rapid—frequently a spectacular—curative response is elicited; indeed, the conversion within a few minutes of a deeply comatose animal into one which presents the appearance of normality constitutes perhaps one of the most striking examples of specific chemotherapy in Comparative Medicine.

The intravenous method of injection has, however, these disadvantages:—

(*a*) It can be applied only with great difficulty in cases characterised by marked excitement and inco-ordinate movement;

(*b*) It involves the sudden introduction of large quantities of calcium into the blood, and this steep gradient of increase in the blood calcium concentration activates the excretory organs to effect its rapid removal, with resultant symptoms of relapse;

(*c*) The intravenous injection of calcium salts is attended by the risk of heart block. This unfortunate complication has been, on several occasions, reported by Continental veterinarians when using intravenous injections of calcium chloride, but the occurrence of heart block has not yet been recorded by British practitioners, by whom, however, the gluconate is much more commonly employed.

(*d*) Calcium chloride, being very caustic, cannot be used subcutaneously, but because its cost is very low, it is commonly employed for intravenous administration; its injection must, however, be very perfectly performed; otherwise, because of its caustic action, extensive necrosis results at the site of injection. Indeed, it is now apparent that the use of calcium chloride should be entirely abandoned in practice. The practicability of the employment of calcium lactate is now under investigation.

Subcutaneous injection appears to be distinctly the preferable method of administration; it possesses the following advantages:—

(1) Experience indicates that the subcutaneous injection of calcium boro-gluconate is entirely unattended by the occurrence of untoward reactions either systemic or local in character.

(2) Subcutaneous injections can be readily administered even in cases characterised by marked excitement.

(3) The calcium solution being absorbed more slowly into the circulating blood, the curative response is, therefore, more steady in its development, while the risk of relapse, even when the udder is milked "dry," appears to be no greater than that which attends mammary inflation.

Advantages of Calcium Therapy over Mammary Inflation

Calcium therapy possesses definite advantages over mammary inflation in that:—

(*a*) It obviates the necessity for interference with the functioning mammary gland which, at the initiation of lactation, is actively engorged with blood, and is exhibiting marked activity in effecting the changes in the blood components necessary to produce the colostrum in the gland acini. Distension of the udder, such as is induced artificially by mammary inflation, suppresses and deranges mammary function during its most delicate and critical phase;

(*b*) The performance of mammary inflation under completely aseptic conditions is not always possible in practice, and the occasional sequela of septic mastitis, while of comparatively rare occurrence, is a very serious one;

(*c*) The treatment can be very easily and very quickly applied;

(*d*) The parenteral injection of calcium salts can be performed only by the veterinary practitioner, and the injurious effects which may follow attempts to effect mammary distension by the lay attendant are thus obviated;

(*e*) The treatment is eminently rational in its conception and practice.

Prevention of Milk Fever by Calcium Therapy

In those highly susceptible cases in which milk fever makes its appearance at several successive parturitions, it has been found that the attack can be effectively prevented by the injection of one ounce to two ounces of calcium boro-gluconate immediately after calving and, preferably, repeated after an interval of 20 hours.

Calcium Therapy in Conditions of Hypocalcæmia other than Milk Fever

The parenteral injection of a solution of calcium boro-gluconate can also be applied with specific curative effect in those conditions other than milk fever which are known to be due to acute hypocalcæmia, *i.e.*, lambing sickness, transit tetany in the mare and ewe, and the parturient eclampsias of the sow and bitch. Certain forms of "staggers" in fed bullocks may yet be found to be associated with acute hypocalcæmia, since their treatment by calcium therapy is also followed by prompt and complete recovery.

Summary

1. A specific curative treatment for milk fever and its allied conditions, which is at once safe, reliable and rational, has now been evolved.

2. The treatment consists in the parenteral injection of a solution of "calcium boro-gluconate."

3. Certain physico-chemical characters of this substance are discussed.

4. Reference is made to a specific method of prophylactic treatment for milk fever in cows.

Acknowledgments

The authors clearly appreciate and readily accede to the suggestion of Professor Oluf Bang that this paper should first receive publication in the Danish language; the work of Jürgens Schmidt of Kölding in demonstrating the curative effect of mammary inflation not only revolutionised the treatment of milk fever and markedly reduced its economic importance in the dairying industry but provided the major clue through which the immediate cause of the disease was eventually disclosed.

To those of our collaborators whose help and encouragement were with us in the difficult early days of our research, we would again acknowledge our gratitude. Among these we are especially indebted to Mr. T. le Q. Blampied, St. Helier; Mr. E. C. Bovett, Bristol; Mr. William Hepburn, Aberdeen; Mr. Oscar Stinson, Appleby, and Mr. J. Young, Dumfries.

Our colleague, Mr. D. R. Wilson, determined the comparative antiseptic properties of calcium boro-gluconate and calcium gluconate.

A short while ago, a dog saved a man's life on the West Coast of Shetland. James Johnson, 60, who lives near Reawick, was out sailing in his boat off Skelda Ness, his only companion being his dog. He had turned the boat for home when a sudden squall capsized it. The boat began rapidly to sink. Johnson was being sucked down with the boat when his dog seized his clothing in its teeth, and held him up until he got hold of an oar. By that time the accident had been noticed, and a boat put out and rescued Johnson, who was suffering from cold and exposure.

Clinical Communications

FOREIGN BODIES IN THE ALIMENTARY TRACT

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Case 1. *Subject*—Three-year-old Sealyham dog

History.—Excessive thirst for one week. Vomition, several times daily for a week and not related to intake of food or water. Loss of condition. A period of frenzy, lasting about one minute, which caused enough alarm for the owner to call veterinary aid.

Symptoms.—None observable.

Diagnosis.—Gastritis.

Differential Diagnosis.—Nephritis. Urine test for albumin proved negative.

Prognosis.—Favourable.

Treatment.—Invalid diet of milk, eggs, fish. Medicinally—gastric sedatives such as mist. bis. aromat., mist. bis. co. Cerebral sedatives—sod. luminal.

Course of Disease.—Continued for two months with persistence of vomition, thirst, loss of flesh, and intermittent bouts of frenzy, one of which was observed by the veterinary surgeon and was as follows:—the animal, resting peacefully in its basket, sat up suddenly, glanced quickly from side to side with an anxious expression on its face, emitted a piercing yelp, rushed out of the room and up the stairs, returning in about half a minute to its basket to curl up for sleep again.

At the end of *two months*, during a similar frenzied period, vomition occurred and an object was voided which, on examination, proved to be the remnants of a golf ball (about half of one).

Sequel.—All symptoms subsided from that moment and the dog made an uneventful recovery.

Discussion.—During the course of treatment the presence of a foreign body was suspected although none was palpable, but as the owner would not agree to X-ray, or an exploratory laparotomy, a policy of "wait and see" had to be adopted.

The intriguing symptom was the frenzy, which could not be made to agree with the symptoms of gastritis. The only explanation put forward for the recurrence of this symptom is that as the strands of rubber degenerated a certain amount of recoil occurred which caused a strange feeling in the animal's stomach. In support of this, it may be added that following vomition the object was seen moving on the floor, and on close inspection several strands were observed to be giving way.

There was no history of the dog swallowing the golf ball.

Case 2. *Subject.*—Four-year-old Aberdeen terrier dog.

History.—Constipation during past two days, with occasional vomition. Inappetence. Listlessness.

Symptoms.—The dog was very dull. Abdominal palpation was very difficult, due to the tense condition of the muscles, and consequently no useful information was obtained. Rectal examination revealed a quantity of fæces, dry and impacted. No other abnormalities were observable.

Diagnosis.—Systemic disturbance due to fæcal impaction.

Prognosis.—Favourable.

Treatment.—Warm soapy enemata followed by glycerine enemata. Invalid diet. Medicinally, a dessertspoonful of castor oil.

Course.—Enemata removed a large amount of very dark brown fæces. On the following day the animal showed no improvement and had passed no fæces. Abdominal palpation revealed slackened muscles and a foreign body in the ileo-cæcal region of the intestines. Further enemata were given and the animal was allowed to rest until later the same day, when examination showed no alteration in the position of the foreign body. There was no pain when this region was palpated. The animal was becoming progressively weaker and so exploratory laparotomy was performed under chloroform anæsthesia.

The operation revealed a foreign body impacted in the ileum, about three inches in front of the cæcum, and that one inch of the intestine anterior to the obstruction was dilated and black in colour whilst that portion surrounding the obstruction appeared in a state of tension and almost translucent. The size of the foreign body was equal to that of a golf ball. Attempts to move the obstruction in either a forward or a backward direction proved futile, therefore an incision was made just in front of the darkened portion and with a little difficulty the object was removed—it proved to be the epiphysis of a rubber "bone." The part of the intestine which had contained the piece of rubber contracted immediately, and the mucous membrane at the site of incision became like velvet in consistence and dark red in colour. The muscle at the site was sutured with catgut as also was the peritoneum, and some omentum was included in the peritoneal sutures. Abdominal muscles and skin were sutured with catgut and silk respectively, and the dog put to bed with hot water bottles.

Next morning the animal lapped a little milk but was very weak; at midday, however, it attempted to sit up and take notice. Late the same evening it collapsed and died.

Post-mortem.—This revealed congestion of the mesenteric vessels in the region of operation but no other abnormality was apparent.

Discussion.—*Seven months* prior to the onset of symptoms the owner of the dog had thrown away the remainder of the rubber "bone" because the animal had already bitten off and swallowed the end of it. No heed was taken of the ingested portion, it being thought that vomition would follow or else that expulsion would occur *via* the anus. No illness followed and by the time the above symptoms began the incident was forgotten.

It would thus appear that the piece of rubber had remained in the stomach all those months without causing any apparent inconvenience, and also had suffered not the slightest deterioration.

. . . . .

Case 3. *Subject.*—Two-year-old Bull-terrier dog.

History.—Four days' illness characterised by excessive thirst, inappetence, and intermittent bouts of vomition.

Symptoms.—None, beyond a slight arching of the back.

Diagnosis.—Gastritis.

Differential Diagnosis.—Nephritis. Examination of urine revealed no abnormality.

Prognosis.—Favourable.

Treatment.—Invalid diet. Medicinally—gastric sedatives.

Course.—Three days later the animal showed no improvement. When the owner was questioned as to the possibility of the existence of a foreign body, it was admitted that *five months* before the dog swallowed a "sorbo" ball, but as no ill effects followed no one was inclined to worry about it.

Abdominal palpation again revealed nothing abnormal.

The owner would not consent to an X-ray examination or to an exploratory laparotomy, and wished to continue with gastric sedatives.

Examination a week later, revealed no alteration in the symptoms, but emaciation was very marked. No abnormality was detected on palpation of the abdomen.

The owner was informed that the dog stood very little chance of recovery: the animal therefore was destroyed.

Post-mortem.—A distension of the duodenum, approximately twelve inches from the stomach, and about the size of a plum, was the cause of the trouble. The intestinal wall at the site was black in colour due to passive congestion of the mesenteric vessels. The foreign body proved to be the remnant of the "sorbo" ball (approximately half of it), black in colour, with a very fœtid odour. The stomach was dilated to the size of a cocoanut and full of a putrid, pale-yellow, opaque fluid.

Discussion.—There was no history of any

illness during the *five months* the ball was resident in the stomach, and the *post-mortem* examination showed no chronic lesions in the wall of the stomach.

. . . . .

CONCLUSIONS

The symptom common to these three cases was that of vomition, but in only one was this due to irritation of the gastric mucosa.

An outstanding feature is the length of time a foreign body may remain latent in the stomach without causing damage or inconvenience. It is presumed that this length of time is governed by the size, shape, or weight of the object, because both the golf ball and the "sorbo" ball remained in the stomach *until* reduced in size, whereas the epiphysis of the rubber "bone," which was approximately the same size as the *remnant* of the golf ball, was comparatively heavy and irregular in outline.

These cases are cited because they are considered of interest, and also as they lay emphasis on the necessity of probing the history at least as thoroughly as treating the symptoms.

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(?) LYMPHANGITIS FOLLOWED BY GAS GANGRENE

J. A. BARLOW, M.R.C.V.S.
ASHBOURNE

Subject.—An eight-year-old shire mare, in good condition.

History.—The mare had never lain up, but came in the yard for some hay and a little bran every day. She had always been out, never ailed, and had been doing a little stone carting three days before I saw her.

I was called to see "a mare with a thick leg," and found her with a leg swollen, very hot and painful, the glands in the thigh being also swollen.

Diagnosis.—Lymphangitis.

I gave the animal a five drachm aloes ball and advised the usual treatment, *viz.* warm water and a little stimulating liniment: ammonia, turpentine, etc. I then left her for two days, as I thought the case was a simple one. The next time I saw her she was able to walk, but the skin on her hind leg appeared drier than was natural, and there was also a suspicion of gas under the skin.

The next day the leg was a lot worse and started to slough, with exhibition of gas and blood-stained fluid. I used all the usual antiseptics. The following day the skin sloughed away from the hock to the fetlock, exposing the tendons and blood-vessels, and, as recovery seemed hopeless, we reluctantly had the animal destroyed.

Queries.—Was the condition lymphangitis? If it was produced by an injury, why were there no marks? How did gas-producing organisms get under the skin?

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AN UNUSUAL "RUBBER BAND" CASE

J. A. BARLOW, M.R.C.V.S.
ASHBOURNE

Subject.—A springer spaniel, about five years old.

History.—This dog belonged to a blacksmith who used to do a little shooting. The owner brought him in and said that he ran after the pony and trap, but made a noise just like a horse roaring.

Examination.—We made an examination and found, deeply embedded in both ears, and pressing on the trachea, a rubber band, as used in glass jars of potted meat, etc.

Treatment.—After removal of the band, the dog's ears were snipped of hair and dressed with eusol, and he made an uneventful recovery.

One wonders how long the poor animal had had this on his head, as his ears were nearly cut through.

CLASSIFICATION OF VETERINARY COLLEGES

At a recent meeting of the American Veterinary Medical Association, held in New York City, the House of Representatives adopted the report of the Committee on Education, but the part relative to the classification of veterinary colleges was eliminated therefrom.

The classification of medical colleges by the Council on Medical Education of the American Medical Association began in 1906 and was one of the most important aids in the reconstruction of medical education which took place in America during the last quarter of a century. At the outset, however, this too met with violent opposition, not only from the colleges but from educational authorities also. Nevertheless, by 1930, the benefits derived from this reconstruction had become apparent and the value of the classification of medical colleges as an aid to it recognised. By means of it those colleges which were not properly equipped to give a satisfactory and complete course sufficient to qualify their students properly to practise the profession were weeded out. Furthermore, classification of colleges is of great assistance to prospective students in their selection of an *alma mater.*

"Veterinary education is, to a large extent, following in the footsteps of medical education, and should profit by following its example where success has been met with and by avoiding its mistakes," says the *Journal of the A.V.M.A.* "Classification of medical colleges having proved to be a potential influence for good, it is to be hoped that the Committee on Education will continue its work in this direction, and that additional reports will be presented to the House of Representatives which will be adopted and that these reports will contain a classification of the present veterinary institutions in America."

Abstracts

[**The Types of Leucocytes in Market Milk as related to Bovine Mastitis.** Holm, G. C. (1934.) *J. Amer. Vet. Med. Ass.* 85. 735-746. 3 tables. (18 refs.)]

Milk from individual cows and samples of bulk milk from herds were examined by chemical, microscopic and cultural means for evidence of the presence of mastitis in the cows supplying the milk.

Samples from normal cows always showed a chloride content of less than 140 mg. per 100 c.c. of milk, whilst samples from mastitis cows showed a chloride content above this level, except in a few cases in which the blood chloride content was very low or the predominating organism was staphylococcus. Hayden's field test gave very good results in estimating milk chlorides. In bulk milk the chloride test became valueless owing to dilution of the mastitis secretion with normal milk.

Milk from normal quarters showed a total leucocyte count below 100,000 cells per c.c., and polymorphonuclears could not be found. Milk from infected quarters showed a total count above this level and polymorphs were present. When bulk samples from twenty typical dairies were examined, six showed a total leucocyte count below 100,000 per c.c., but only one was entirely free from polymorphs, which the authors consider to be the vital criterion. [The authors base their conclusion, that neutrophiles, eosinophiles and monocytes are only to be found in mastitis milk, upon the examination of 11 normal and 15 mastitis infected cows, cultural findings being taken as evidence of mastitis. If after the examination of a large group of cows, and particularly those in the early and late stages of lactation, this finding with regard to the absence of polymorphonuclear leucocytes can be upheld, the microscopic examination of bulk milk will afford a rapid and satisfactory method of testing such milk for the admixture of mastitis secretion.]

E. J. P.

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[**The Elimination of *Brucella abortus* from the Fæces of Calves taking Infected Milk.** Ranney, A. F. (1934.) *Cornell Vet.* 24. 244-253. 1 table. 16 refs.]

Calves have been fed milk artificially contaminated with *Br. abortus* to discover if the organism is eliminated in the fæces, and, if so, for how long it continues to be excreted after the feeding of infected milk has ceased.

Ten calves were fed contaminated milk for 10 weeks. During this period their serum agglutinins rose from titres below 1 : 25 to 1 : 100 or more. After feeding was discontinued these titres commenced to drop gradually but agglutinins persisted for some months. Out of 100 samples of fæces taken from the calves during the feeding experiment, 40 contained *Br. abortus* capable of infecting guinea pigs. In no instance was this organism demonstrated in a sample taken more than seven days after feeding had been discontinued. The experiment suggests that an arbitrary quarantine period of 30 days allowed between the removal of a calf from its infected dam and its admission to a contagious abortion-free herd allows an ample margin of safety.

E. J. P.

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[*Brucella abortus* **Infection of Calves.** Lübke, A. (1934.) *Arch. f. wiss. v. prakt. Tierhlk.* 68. 233-249. 5 plates. (17 refs.)]

The following questions are studied : 1, The pathological anatomy of Brucella infection of calves ; 2, whether lesions progress or regress in young animals ; 3, whether the sexual organs of calves become involved ; 4, whether it is possible by means of serological examinations to decide if infection is dying out. Experiments were carried out with artificially infected calves.

Lesions in calves are found chiefly in the liver, kidneys and lymph glands and comprise enlargement of the organs and nodule formation. These nodules consist of proliferative foci of reticulo-endothelial cells. The fate of these lesions is of epidemiological importance as indicative of the likelihood or otherwise of calf-hood infection dying out. Unfortunately, it could not be decided whether these lesions regress, and the question is to receive further attention. Sexual organs of infected calves did not harbour *Br. abortus*. No correlation between a fall in the serological reaction and a regression of lesions could be demonstrated.

E. J. P.

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[**Preliminary Studies on the Complement Fixation Test for the Diagnosis of Bovine Anaplasmosis.** Rees, C. W., and Mohler, W. M. (1934.) *J. Amer. Vet. Med. Ass.* 38. 669-674. 8 tables. (7 refs.)]

Complement fixation has been demonstrated, using serum from a bovine suffering from anaplasmosis as antibody, and red blood corpuscles heavily infected with anaplasms as antigen. In an attempt to find a more suitable antigen, emulsions of infected ticks have been used. Antigen prepared from infected nymph and adult *Rhipicephalus sanguineus* fixed complement in conjunction with positive serum. The antigenic property acquired by the nymph was not lost in the subsequent moult. *Boophilus annulatus* gave similar results.

As well as providing a practical source of antigen for use in a serological test for anaplasmosis in bovines, thus revealing carriers of

infection, the method might be applied to the survey of a district for ticks infected, not only with anaplasmosis, but also with other protozoal and possibly even virus infections.

E. J. P.

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[The Incidence of Tuberculosis among Cattle belonging to the Wachagga Tribe in Tanganyika Territory (E. Africa). Cornell, R. L. (1934.) *Jour. Comp. Path. and Therap.* 47. 4. 320-329. (2 photographs.)]

Native-owned cattle in Tanganyika, with the exception of those belonging to the Wachagga tribe, are allowed to graze in open range during the day and are kept in kraals at night. Judging by meat inspection returns, tuberculosis amongst these cattle is extremely uncommon.

The Wachagga tribe, however, owing partly to lack of pasture and partly to the danger from tsetse-flies, keep their cattle confined day and night in their own dwellings, and hand-feed with cut fodder.

The cattle are, in consequence, stunted, and milk production is very low.

Human tuberculosis is high in the tribe, and consequently an investigation into the incidence of bovine tuberculosis was undertaken.

Of 441 bovines tested (including cows, bulls and calves) by the double intradermal test, 1·8 per cent. gave a positive reaction, 93·8 per cent. a negative reaction, and 4·3 per cent. were classified as doubtful.

E. W. A.

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[Microphotography of the Living Virus of Pleuro-Pneumonia in Cattle. Turner, A. W. (1933.) *J. Coun. Scient. and Indust. Res.* 6. Page 299. (2 plates.)]

After a brief critical review of the technique and findings of other workers in this field, notably of Frosch and of Barnard, the author describes microphotographic studies of the organism in 24-hour cultures in his new medium —" filtered V.F. ox Serum " (10 per cent. serum sterilised by filtration through the Seitz E.K. disc).

Examination by dark ground illumination revealed large numbers of the organism, but photography was difficult by reason of the paucity of the light transmissible by this method. Results were finally obtained by using a Leica camera at full aperture, fitted to a compensating ocular ×15, with an apochromatic oil immersion objective ×60, giving a final magnification at the conventional 25 cm. visual focus of ×900. This is reduced at the photographic focal length of 5 cm. to ×180, with a proportionate increase in luminosity, by which means the initial difficulty of inadequate light is overcome. Using Agfa Superpanchromatic films, the fastest and finest available, subsequent enlargement ×7 was possible, giving a final magnification on the photographic prints of ×1250.

By this procedure the organism is revealed as a branched mycelium usually about 65μ but up to 155μ in length, in which form it is of course quite unfiltrable. The filtrability of the organism is explained on further observation: the mycelia are seen to segment, with an appearance closely resembling streptococci, and later to fragment into spherical cocci about 0·2μ in diameter, similar to those described by Barnard and by Frosch. The mycelia are evident in fresh pleural " virus," but within a few hours, only the coccoid forms are present. Atypical concavo-convex and flat discs, differentiable from the coccoid forms, are present in cultures, particularly older cultures, on serum V.F. agar.

E. O. L.

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[On the Rabbit Passage of Rinderpest Virus. Inoue, T. *J. Jap. Soc. Vet. Sci.* 13. 4. 314-336. (Refs. 8. Summary in English.)]

Rabbit-passage with the " Institute " strain (calf-passage virus) of rinderpest virus was attempted by the inoculation of 5 c.c. of blood on the 7th day of infection in each generation. Virus pathogenic for the calf was detectable in the blood of rabbits at the 50th passage—351 days subsequent to the first inoculation, proving that the virus of rinderpest can live and even multiply in the animal body.

A rise of temperature (40° C.) was generally shown by the inoculated rabbits after two to four days' incubation, and tending to continue for from three to four days, but there was no other symptom of rinderpest infection and symptomless infection was frequently observed.

Rabbit-passage with two field strains of virus was next attempted. In two experiments carried out with these two strains, active virus was detected up to the 30th generation (210 days) but not at the 37th passage. It appears, therefore, that in comparison with field virus, calf-passage virus can be transmitted for a longer period through rabbits. Rabbits infected with the field virus again showed a rise in temperature.

In the author's experiment, no rinderpest virus was found in the blood of rabbits two weeks after inoculation. The passage of rinderpest virus was tentatively made through guinea pigs, which showed that active virus no longer existed in the blood, spleen and lymph glands at the 7th passage, but in none were any symptoms, even fever, exhibited. Herein may lie the explanation of the fact that rinderpest virus is non-pathogenic in the guinea-pig and cannot multiply in the body of that animal.

W. B.

[**1. Serum Concentrate: Living Virus Immunity against Canine Distemper.** Little, G. L. (1934.) *J. Amer. Vet. Med. Ass.* *38.* 5. pp. 576-590.

2. Further Observations on the Use of Serum Concentrate (Little) **to Control Canine Distemper.** Lentz, W. J. (1934.) *Ibid.* pp. 590-592.

3. Experiments to Produce Immunity to Canine Distemper in Ferrets. Ross, V. (1934.) *Ibid.* pp. 592-595.

4. Report on Serum Concentrate (Little). Morris, M. L. (1934.) *Ibid.* pp. 595-596.]

1. This is the second report by the author and is written to substantiate the claims made in the first report that a single injection of concentrated serum and living virus has been found to produce a strong and lasting immunity against distemper.

The author holds the view that this method can be used with safety in puppies under three months old simultaneously with treatment for worms, and finds that a more lasting immunity is produced by immediate exposure to clinical cases of distemper after the injections.

The best immunity of all was produced by giving the virus 48 to 72 hours before the administration of the concentrated serum.

Frozen virus was found to give no immunity on exposing inoculated dogs to clinical distemper.

The author found that the administration of concentrated serum gave excellent results in early clinical distemper cases.

2. The author of this paper supports the claims of Little in regard to the efficacy of serum concentrate (Little) injections in the control of clinical distemper and finds that a single dose of 4 c.c. of the serum is usually sufficient to control the virus. Smaller doses may have to be repeated in 24 hours.

3. This paper records the results of administering serum concentrate, or ordinary hyper-immune serum, and virus to susceptible ferrets.

Ferrets were given either 10 mg. of dried virus or 0·25 c.c. of a 20 per cent. suspension of a distemper dog's spleen.

In the first experiment four ferrets were given 20 c.c. of four samples of unconcentrated serum together with dried virus. Two of these died within two days and were replaced. These four died on the 34th, 27th, 24th and 30th days after injection.

Two ferrets received 4 c.c. of concentrated serum (Little) and dried virus and these died on the 35th and 42nd days, and two received the same dose of concentrated serum and 0·25 c.c. of dog spleen; one of these remained normal and the other one became ill but recovered.

Three more ferrets received, at the same time, 4 c.c. of serum concentrate and two days later another 4 c.c. of serum and dried virus. Fourteen days later these were brought into contact with sick ferrets and they died on the 6th, 9th and 15th days after contact.

The author concludes that, while the experiments are few, ferrets receiving serum concentrate survived longer than those receiving unconcentrated serum.

4. The author reports favourably on the use of serum concentrate in clinical distemper but gives no statistics.

B. B-J.

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[**Canine Distemper Vaccine.** Dempsey, T. F., and Mayer, V. (1934.) *J. Comp. Path. and Therap.* *47.* 3. pp. 197-200.]

Two experiments are described in which dogs were vaccinated against distemper with a vaccine prepared by photodynamic inactivation of the virus with methylene blue, as described by Perdrau and Todd.

In the first experiment four dogs were given 2 c.c. of the material irradiated from 0-20 minutes. The dogs receiving the vaccine irradiated for 0, 10 and 20 minutes showed no symptoms; the one receiving the vaccine irradiated for 5 minutes died from typical distemper. The remaining three were tested 30 days later for immunity and that receiving the mixture irradiated for 10 minutes failed to react, the other two showing typical symptoms.

In the second experiment eight dogs were given 3 c.c. of the vaccine, four dogs with vaccine irradiated for 5 minutes and four with vaccine irradiated for 10 minutes. Two in each batch died and were found to be heavily infested with worms. The two remaining dogs in the first batch showed no symptoms and were proved to be immune on injection of the virus, but the two in the second batch reacted to the injection of virus.

B. B-J.

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[**Further Studies in the Control and Hospitalisation of Canine Distemper.** Morris, M. L. (1934.) *J. Amer. Vet. Ass.* *38.* pp. 39-63.]

In this article the author divides up distemper into five groups, depending on the clinical evidence and the blood picture on microscopic examination.

Group I contains dogs showing little or no clinical evidence of the disease and he draws attention to the use of a blood cell count, especially when the dog is brought in for distemper inoculation, when the administration of virus might have serious consequences. These are given 20 c.c. of homologous serum without delay.

In Group II he includes dogs showing early clinical symptoms of distemper, a small rise in temperature, disturbed appetite and perhaps slight coryza. Examination of the blood shows an elevation in the leucocyte count and lowered

nuclear index. These cases are treated with an inoculation of serum together with nucleotide.

Group III. These are dogs showing typical distemper symptoms. The blood picture shows a normal or subnormal leucocyte count with a low nuclear index. Treatment similar to Group II.

Group IV includes cases of "dry distemper" often followed by meningitis and chorea. The blood picture is usually diagnostic, with a definitely subnormal leucocyte count and low nuclear index. Prognosis is not at all favourable, but usually he administers homologous serum and nucleotide followed by another dose of nucleotide if the leucocyte count continues low.

Group V contains those dogs with distemper plus secondary complications. The blood picture is characterised by leucophilia and a low nuclear index. Treatment is given according to symptoms and 20 c.c. of homologous serum administered.

The author emphasises the value of a blood count being taken frequently both to help diagnosis and also to ascertain how the disease is progressing, in case other treatment should be adopted.

B. B-J.

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[Canine Rabies Experimental Vaccination. Barnes, Metcalfe, Martindale, and Lentz. (1934.) *J. Am. Vet. Med. Ass.* 37. 5.]

"Sanitary officials should not rely on vaccination as a means of rabies control."

The authors draw this most important conclusion from a series of carefully controlled experiments in dogs, using a number of commercial single-dose rabies vaccines.

In their previous report details were given of an investigation with four commercial carbolised canine rabies vaccines, where groups of 10 dogs were inoculated with each vaccine (total: 40 dogs). On subsequent exposure, with 16 healthy controls, to rabies infection, 33 (82·5 per cent.) of the "vaccinated" dogs, and 13 (81·25 per cent.) of the controls, developed rabies. The authors observe that "none of the vaccines used was capable of immunising dogs against any of the viruses used."

This investigation with carbolised vaccine was followed by a similar investigation of a chloroformised vaccine (Kelser method) from commercial laboratory "A." Twenty experimental and 20 control animals were used. These subjects were tested, at intervals varying from three to eight months after vaccination, by inoculation of varying doses of street viruses by the subarachnoid, intravenous and intramuscular routes, with the following results: thirty-five per cent. of the vaccinated animals and 55 per cent. of the controls died from rabies, whilst a further 5 per cent. of the controls also died, but rabies was not proved.

Considerable irregularity was observed in individual susceptibility to dose and strain of virus. No instance of rabies infection resulted from the inoculation of vaccine alone.

In an experiment undertaken with a view to the determination of the minimum fatal dose for purposes of post-vaccinational infection, by inoculation of varying doses and dilutions of virus, the authors found some indication that the dispersion of the virus by dilution, rather than the actual amount of virus, was the important factor in infection.

In concluding, the authors affirm that "neither the proper method nor the proper vaccine seems to have been found" and that "there has been a greater increase in the number of cases of rabies both in animals and in humans since the single-dose rabies vaccine came into use than for any other equal period of time known. . . . If sanitary officials are going to cope successfully with the rabies situation . . . they must apply more strict sanitary police measures."

E. O. L.

N.V.M.A. Divisional Reports

SOUTHERN COUNTIES VETERINARY SOCIETY*

ANNUAL MEETING AT SALISBURY

The 51st Annual General Meeting of the Society was held on Friday, March 1st, at the Red Lion Hotel, Salisbury. Following the business meeting, Major G. W. Dunkin, M.R.C.V.S., D.V.H., gave a paper on "Tuberculin and Tuberculin Testing."

The President, Mr. J. F. D. Tutt, was in the chair, and there were also present: Messrs. F. Beckett, H. S. Caldwell, B. Gorton, E. R. Harding, E. S. Martin, W. F. Maynard, J. H. Ripley, A. E. Roberts, H. C. Rockett, J. T. Turney, C. Tyler, J. Stewart Wood and J. B. White (Honorary Secretary), together with Dr. W. M. Scott, Col. Holness, Capt. Porter, Capt. J. C. Coleman and Mr. C. J. Pugh as visitors.

The minutes of the previous meeting, having been published in *The Veterinary Record*, were taken as read and confirmed.

Correspondence. (1) From Sir Frederick Hobday, Messrs. R. E. C. Bullen, N. S. Barron, J. Facer and G. Parr, apologising for absence.

(2) From the N.V.M.A., inquiring the views of the Society as to the desirability of making one composite subscription, to cover membership of the "National" and of the Divisions.

Mr. Gorton put forward several points in favour of such a decision, and it was agreed, on

* Received for publication, March 26th, 1935.

the proposal of the PRESIDENT, seconded by the HON. SECRETARY, that the Society was wholly in favour of such an arrangement.

(3) From the N.V.M.A., asking for the name of the delegate from the Division to attend the Royal Sanitary Institute Congress. Major Martin was invited to act as delegate for this year and agreed to do so.

(4) From the N.V.M.A., asking that the establishment of free clinics for the animals of the poor, to be run in conjunction with the R.S.P.C.A., should be made general throughout the Division. The Hon. Secretary pointed out that practically all districts from which this Division drew its members were already covered by existing clinics.

(5) From the N.V.M.A., enclosing a pamphlet which gave details of the new attested scheme for dairy herds.

(6) From the R.C.V.S., appealing for an annual subscription to the Library Endowment Fund.

Major MARTIN proposed that a donation of £2 2s. 0d. be made, and this was seconded by Mr. H. S. CALDWELL and carried.

(7) From Mr. W. E. Petty, asking the Society to accept his resignation. This was accepted with regret.

The HONORARY SECRETARY and TREASURER then presented a combined Annual Report for 1934-35.

ANNUAL REPORT

Four meetings have been held during the year, the first being at Winchester, when Mr. Henry Gray gave a paper on " Some Matters concerning Small Animal Practice."

The Autumn meeting was held at Bournemouth in September. Major Dalling was the essayist, and chose " Some Recent Observations on Canine Distemper Immunisation," as the subject of his paper.

At the Winter meeting, held at Southampton in December, Dr. Stableforth read a paper on " The Rearing of Calves Free from the Major Diseases of Cattle."

The fourth meeting is that now in progress.

The average attendance at the meetings was nine members, and between two and three visitors.

Three new members were elected during the year—Major T. A. Bryan Cocksedge, Messrs. H. S. Caldwell, and C. Tyler. One very old member has been lost in the death of Mr. W. Burt, and Mr. W. E. Petty has resigned.

There are 33 paying members, and seven honorary members—a total of 40.

The current account shows a balance of £1 5s. 10d. as against a deficit of £3 3s. 3d. for the previous year.

The sum in the deposit account is £48 16s.

The Hon. Secretary also said that he had sent up £3 during the year to the Victoria Veterinary Benevolent Fund. This sum represented the proceeds from the collecting box and was in addition to their annual donation.

This combined report was accompanied by a detailed balance sheet.

The Honorary Secretary concluded by appealing for better and more regular support at the meetings.

The report and statement of accounts were then formally adopted.

ELECTION OF OFFICERS

The following officers were re-elected to their positions of last year :—

President.—Mr. J. F. D. Tutt.

Vice-Presidents.—Messrs. E. R. Harding and J. Stewart Wood.

Hon. Secretary and Treasurer.—Mr. J. B. White.

Additional Members of the Council.—Messrs. R. E. C. Bullen, G. M. Gould and J. T. Turney.

Representative of the Society to serve on the Council of the N.V.M.A.—Mr. R. E. C. Bullen.

Donations.—A donation of £5 5s. 0d. was voted to the Victoria Veterinary Benevolent Fund, and the sum of £1 1s. 0d. to the National Horse Association.

Place of Next Meeting.—It was decided to hold the next meeting in Bournemouth towards the end of May, or early in June.

Paper.—This concluded the business of the meeting, and the President called upon Major Dunkin to read his paper.

Following a good discussion, the PRESIDENT proposed a very hearty vote of thanks to Major Dunkin for his paper, and also to Mr. Beckett for opening the discussion. This was carried with applause. [Major Dunkin's paper is reproduced, together with a report of the discussion upon it, at the commencement of this issue—*Editor.*]

Tea was then served, the meeting being the guests of the Salisbury members.

J. B. WHITE, *Hon. Secretary.*

It has been decided to continue, for another season, the British Goat Society's scheme for the improvement of milch goats kept by cottagers, smallholders and others of similar position. Under this scheme cottagers are able to procure the services of first-class stud goats for breeding purposes at a maximum fee of 4s. per service. The stud goats used must have been entered, or be considered suitable for entry, in the Society' Herd Book and they must have been bred from proved milk-producing stock.

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Reuter's correspondent reports the announcement, made to the New York Cardiological Society, of the discovery of a drug, " thevetin," which is described as the most powerful drug known for the stimulation of the heart, being several times more potent than digitalis.

VETERINARY MEDICAL ASSOCIATION OF IRELAND*

ANNUAL GENERAL MEETING AT DUBLIN

The Annual General Meeting of the Veterinary Medical Association of Ireland was held at Wynne's Hotel, Abbey Street, Lr., Dublin, on Tuesday, January 29th, 1935, when the following members were present: Messrs. A. A. Donnelly, Sean O'Donovan, M. J. MacClancy, C. M. Griffin, P. J. Gaffney, P. A. Rogan, J. D. Whitty, P. M. McManus, H. O'Leary, W. E. MacDonald, J. J. Lyons, V. E. Stack, P. Crowley, J. Kenny, John A. Flynn, J. M. Murphy, J. F. Timoney, A. F. O'Dea, Professor J. J. O'Connor and Professor Browne.

Owing to the unavoidable absence of the President, Mr. Daly, Mr. Donnelly was voted to the Chair.

The minutes of the previous meeting were read, confirmed and signed.

Correspondence: This comprised communications from (1) Messrs. J. V. Carroll, J. J. Condon, P. F. Dolan and T. McD. Kelly, apologising for absence.

(2) Brigadier-General Moore, sending his voting paper and suggesting alterations in the draft scheme for the reorganisation of veterinary services; also saying that he was looking forward to visiting the forthcoming Congress of the N.V.M.A. in Belfast.

(3) Mr. E. C. Winter, of Northgate, Worthing, returning thanks for receipt of notice of meeting, etc., and wishing the Association success.

(4) Mr. James Dodd, regretting inability to attend the meeting and saying he had no comment to make on the draft scheme for reorganisation of the veterinary services except that he considered it good.

(5) The City Manager, Dublin Corporation, acknowledging the receipt of the Hon. Secretary's letter of January 24th, 1935, on the subject of the salary payable to a proposed Veterinary Inspector in the Corporation Service.

Hon. Secretary's Report

The Hon. Secretary's Report for the year 1934, having been circulated, it was proposed by Mr. Whitty, seconded by Mr. MacClancy, and passed unanimously, that it be adopted.

Report for the Year 1934

There were five general meetings during the year, one being the Provincial Meeting held in Limerick. The average attendance at the meetings was 35, the largest attendance being 45 at the May meeting when practical demonstrations were given and 42 at the meeting in Limerick. There were only 16 at the Annual General Meeting.

* Received for publication, March 16th, 1935.

Nine Council meetings were held and there were three important Committee meetings to consider the Milk Bill, 1934. An important event of the year was the reception by the Minister for Local Government and Public Health of a deputation from the Association to consider the Milk Bill.

A.—Business at General Meetings

I.—The Annual General Meeting.

The chief items of interest at this meeting were as follows:—

1. *Election of Officers.*—The following officers were elected for the year 1934:
   President: Mr. F. J. Daly (unopposed).
   Vice-Presidents: Messrs. S. O'Donovan and A. F. O'Dea.
   The *Hon. Treasurer* and *Hon. Secretary* were re-elected.
   Members of Council: Messrs. J. M. Murphy, P. A. Rogan, J. D. Whitty, J. J. Dundon and J. J. Condon.
2. An appropriate Valedictory Address by Mr. Mulcahy.
3. *Presidential Address.*—Mr. Daly delivered a very interesting inaugural address in which he referred to various topics concerning the profession.
4. *The Presentation by the Hon. Treasurer of the Balance Sheet* for the past year which showed a balance in Bank of £150 19s. 3d. and investments amounting to £358 6s. 8d., which afforded a dividend of £14 4s. 8d. The balance in bank for the previous year was £172 13s. 9d. The Current Subscriptions amounted to £39 4s. 6d. The total expenditure was £91 1s. 2d.
5. The decision to invest £100 of the Funds of the Association in National Loan.

II.—The General Meeting, May 2nd.

Practical demonstrations were given by

1. *Professor Craig* on (*a*) The examination of stomach contents for parasites; (*b*) euthanasia of a dog.
2. *Mr. F. J. Daly* on the application of the intradermal tuberculin test.
3. *Mr. P. F. Dolan* on the production of a high-grade milk and the routine inspection of dairy premises, assisted by Mr. S. O'Donovan.
4. *Professor J. J. O'Connor* on (*a*) the removal of an unusual tumour from the anal region of a Foxhound; (*b*) the operation for paraphimosis in a thoroughbred horse.

Keen interest was taken in the various demonstrations, after which a pleasant interval was spent partaking of tea provided by the Association.

The Ordinary Meeting was held afterwards at which the chief business was as follows:—

1. *The passing of a resolution* to the effect that the Veterinary Medical Association of Ireland would support the North of Ireland Veterinary Medical Association in inviting the National Veterinary Medical Association to hold its Annual Congress in Belfast in 1935.
2. *Relief for a Destitute Member of the Profession.*—It was decided after full discussion of the case to issue an appeal

to Members of the Association for subscriptions to a fund for this purpose. There was a generous response to this appeal from several members of the profession, for which the member concerned has expressed his grateful thanks through the Hon. Secretary.

III.—General Meeting in Limerick, July 28th.

This Meeting was in two parts, as follows:—

1. Practical demonstration of the production of clean milk at three dairy farms outside the city, by Mr. Harnett, at 5 p.m. Extraordinary interest was taken in this demonstration, in which every detail was lucidly described by Mr. Harnett.
2. A meeting in the City Hall at 7.30 p.m., at which Mr. Harnett read a paper on "Milk Hygiene."

This paper dealt exhaustively with the subject and was referred to in eulogistic terms by the many members of the large audience who took part in the discussion which ensued. The attendance probably would have been even greater had not the meeting clashed with that of the N.V.M.A., in Llandudno.

Other business done at this meeting was the passing of a resolution advocating the appointment of a commission by the Council of the Association to consider the reorganisation of the Veterinary Services with the ultimate purpose of presenting this recommendation to the Government.

IV.—General Meeting, August 7th, at the Research Laboratory, Thorndale, Dublin.

At this meeting, Mr. Norris, having extended a hearty welcome to the members of the Association, gave a very interesting and instructive address on the research work done in the laboratory. The large amount of useful work done in this direction was a revelation to the audience considering the slender resources at the disposal of the institution.

Mr. Timoney read an extremely interesting paper on "Bovine Sterility and its Connection with Contagious Abortion," which was listened to with great attention. In the discussion which followed many questions were replied to by Mr. Norris and Mr. Timoney and all the speakers congratulated them on the excellence of the scientific matter which they provided for discussion.

Another very interesting and instructive feature of this meeting was the beautiful pathological specimens on exhibition for the members attending the meeting. During an interval in the meeting, Mr. Norris entertained the company to tea, which was greatly appreciated.

V.—General Meeting, November 17th.

At this meeting the report of the deputation to the Minister for L.G. and P.H., comprising six typed pages of foolscap, was read and Mr. Florence O'Leary read a paper entitled "Observations on Diseases and Accidents of Greyhounds." This was the first paper presented to the Association on this subject, which is of special interest at present owing to the great development of greyhound track racing. The most common accidents and diseases of greyhounds were dealt with in a practical manner, displaying intimate knowledge and experience with this subject on the part of the writer. The paper was highly appreciated and the author was complimented on its excellence by all the speakers.

B.—Business Transacted at Council Meetings

I.—Meeting, January 30th, 1934: This was a special meeting held to consider matters in connection with the fees paid to veterinary surgeons officiating at greyhound racing tracks.

II.—Meeting, February 23rd, 1934: The principal matters dealt with were

1. *Arrangement of the programme* for the General Meetings for the coming year.
2. *The Civil Service Commission* concerning the evidence given by Mr. Boland regarding the veterinary surgeons employed in the Civil Service. Mr. Kenny, speaking as Hon. Secretary of the Veterinary Officers' Association, said he was satisfied that his Association had done all that was possible to endeavour to have their interests safeguarded and that he could not see that the V.M.A.I., could help them by intervening on their behalf.

III.—Meeting, March 26th, 1934: matters dealt with included:—

1. A letter from Mr. T. A. Morris, Secretary, Irish Coursing Club, Clonmel, to the effect that the Irish Coursing Club leaves the matter of the veterinary surgeon's fee for officiating at greyhound racing tracks for arrangement between the Greyhound Racing Co. and the veterinary surgeon, and that the appointment of a veterinary surgeon is not insisted upon by the I.C.C., as far as the smaller tracks are concerned.
2. A letter from the Secretary, Harolds Cross Greyhound Racing Co., saying that owing to prevailing depression the Company cannot afford to pay the officiating veterinary surgeon more than he is receiving at present.
3. Appointment of a Committee to draft a reply rebutting the remarks made by the Minister for L.G. and P.H. during the discussion of the amendment moved by Mr. McGilligan for the exclusion of veterinary surgeons from the Scope of the Local Services (Temporary Economy) Bill.
4. Letter of congratulation to Mr. D. Twomey on his appointment as Secretary of the Department of Agriculture.

IV.—Meeting, May 7th, 1934: This meeting was held to amend, if necessary, and approve in final form the letter which had been drafted to the Minister for Local Government and Public Health refuting his statements in the Dail regarding the veterinary profession during the discussion on the Local Services (Temporary Economy) (No. 2) Bill.

V.—Meeting, September 14th, 1934: The business of this meeting comprised:—

1. The appointment of the President and the Hon. Secretary as delegates from the V.M.A.I., on the Provisional Committee of the N.V.M.A. The Hon.

Treasurer was already co-opted as a member of the Committee.

2. Discussion on the Milk Bill, 1934. The Bill was gone through Section by Section and alterations were made in Sections 6, 10, 15 and 30 and a Committee was appointed to deal with Section 18 and subsequent sections except Section 30 which was already dealt with. This Committee spent several hours discussing the Bill and proposed many amendments thereto which were embodied in a report to a meeting of the Council.

VI.—Meeting, October 8th, 1934: At this meeting the report of the Committee appointed to consider the Milk Bill was read, when the alterations which had been suggested were considered and revised where necessary. A deputation was appointed to wait on the Minister for Local Government and Public Health and ask him to consider certain features of the Bill. A memorandum embodying the suggested alterations in or additions to the Milk Bill was drawn up and copies supplied to the members of the deputation and to the Minister for Local Government and Public Health.

VII.—Meeting, November 1st, 1934: At this meeting final arrangements were made for the meeting of the deputation with the Minister which took place on Wednesday, November 7th, 1934, at the Minister's Office in the Custom House, Dublin. The members of the deputation were very favourably impressed by the reception given them by the Minister. A full report of the proceedings was read at the November General Meeting.

VIII.—Meeting, December 11th, 1934: This meeting was held:—

1. To consider the duties involved in connection with the inspection of meat and milk in certain districts and to recommend a reasonable remuneration for carrying them out. This was done and a salary which was thought to be commensurate with the amount of the work involved was recommended to the Medical Officer of Health for the district.
2. To consider the appointment of a Commission for the Reorganisation of the Veterinary Services in the Irish Free State.

It was decided, before appointing the Commission, to obtain reprints of a similar scheme published some years ago and to have these reprints circulated amongst the members of the Association in the Irish Free State and at the same time to invite the members to send to the Hon. Secretary their views thereon or amendments thereto which they might consider desirable.

IX.—Meeting, January 8th, 1935: This meeting was held to nominate and arrange for the election of the Officers and Council members of the Association for the year 1935.

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Matters which are still in abeyance are:—

1. The grievances of the veterinary officers of the Department of Agriculture.
2. The grievances of the Meat Examiners: Agricultural Produce (Fresh Meat) Act.
3. Arrangements for free treatment of the Animals of the Poor.
4. Grievances of Part-time Veterinary Officers.

J. J. O'Connor, M.R.C.V.S.,
Hon. Secretary.

January 29th, 1935.

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The Hon. Treasurer's Report for 1934.—On the motion of Professor Browne, seconded by Mr. Murphy, the Hon. Treasurer's Report, was adopted.

ELECTION OF OFFICERS FOR 1935

The following officers were elected for 1935:—

President.—Mr. Sean O'Donovan.

Vice-Presidents.—Mr. H. O'Leary and Mr. A. F. O'Dea.

Hon. Treasurer.—Professor T. G. Browne.

Hon. Secretary.—Professor J. J. O'Connor.

Members of Council.—Messrs. M. J. MacClancy, C. M. Griffin, S. Conway, J. A. Flynn and P. J. Gaffney.

Mr. Donnelly then vacated the Chair for the new President, Mr. Sean O'Donovan, who was received with acclamation.

President's Address

Mr. O'Donovan delivered the following address:—

It is with mixed feelings that I rise to thank you for electing me your President for the coming year. I feel very grateful for the honour you have conferred on me by electing me to this office of trust in our Association. I do not, however, regard it simply as an honour, but feel that you have placed me in a position which entails considerable and onerous duties.

The Hon. Secretary's report for the year 1934, of which you have all received a copy, reveals the large amount of work done. Besides the ordinary general meetings, there were ten council meetings held and several sub-committee meetings to consider the provisions of the Clean Milk Bill and other matters. A Council meeting was held last week, since the report was prepared, to consider a matter of urgency for some members of the profession. I mention these facts to show you that your Council has a busy time and also to tell you of the example that has been set by our outgoing President, Mr. Daly. He has attended all these meetings during the year, necessarily at considerable inconvenience to himself, busy practitioner that he is. He headed the deputation to the Minister for Local Government and Public Health, an event which I feel was instrumental in helping the Ministry to decide to re-draft the Milk Bill. He surely has set a standard difficult to emulate. Another document circulated to you with the notice of this meeting reveals the immense work done by our Association just a decade ago. I hope you have all read this classic again. It is deserving of

study. We see how little has been accomplished since and yet that some advance has been made.

Professor O'Connor, in his Annual Report, has given you the history of the past year. I have also briefly referred to the past, but I believe that something in the nature of predicting the future is required in an address such as this. Well, I fear I am a bad prophet. Some people have said of us that in our country the unexpected always happens. With this I do not of course agree, but I do agree that in our Association the unexpected has happened when I find myself addressing you as President here to-night.

I would sincerely like to predict that during the year every member of the profession in the Saorstat would join our Association, and not only join it but be interested supporters of it. I fear, however, that I would be proved a false prophet on the first attempt. Hence, I will rather appeal for greater active membership of the Association. You notice I use the word "active." Let each one examine his own conscience and I hope that the result will be greater interest, lesser difficulties and a better financial position during the coming year for our Association. I make a special appeal to the young members of the profession entering on their careers to join up with us. Individually, we are units in the organisation of the Nation, taking each day for what 'tis worth, and, I hope, doing the best we can. Coincident with working for a living we are helping the welfare of the community. But as associates of this professional body, we have much to strive for collectively, much knowledge and experience to gain from our scientific and other meetings. We can always be students. Just as important is the spirit of comradeship which helps us to overcome the selfish instinct and maintain a high professional standard.

We are in a period of economic transition and undoubtedly members of our profession have been severely hit by this change. The farmers' difficulties have got great publicity, but the veterinary practitioner has been equally hard hit, and, although our Association cannot obtain similar publicity, it shall continue its endeavours on his behalf. The elimination of old diseased cattle from the herds of the country should, I consider, have been under way long ago. It would be a great step in enhancing the value of the healthy stock and necessarily increasing the practice of the veterinary surgeon. I hope that the coming year will see much good work done in this respect. The Government, I maintain, have not availed themselves of a splendid opportunity of forwarding the campaign for eradicating tuberculosis from our livestock. Let us hope that this year will see a good beginning. The coming milk legislation will, I hope, be a further step in this direction, and our members must be alive to the increased opportunities which may be afforded them and responsibilities imposed on them.

I will conclude by asking the members to examine the balance sheet prepared by our Honorary Treasurer. You will notice that there is a slight deficit on our year's working. You will also see the force of my request to-night for active support of the Association. One of the primary evidences of such activity is the prompt payment of the small annual subscription.

We will also have before us to-night a motion from the Council in connection with the Benevolent Fund. Our position in this matter is very unsatisfactory and I hope the members will consider it carefully.

In again thanking you, I wish you all health and success for 1935.

Victoria Veterinary Benevolent Fund.—On the motion of Professor Browne, seconded by Mr. MacClancy, it was resolved that in future, along with the appeal for the annual subscription to the Association, an appeal be also made for a minimum subscription of five shillings towards the Victoria Veterinary Benevolent Fund from all members of the profession in Saorstat Eireann who are not members of the Association, asking for the same subscription to the Fund if they are not already subscribers thereto.

New Member.—On the motion of Mr. Murphy, seconded by Mr. O'Donovan, Mr. Walter Walsh was unanimously elected a member of the Association.

X-Ray Apparatus.—Mr. Donnelly having raised the question of the availability of X-ray apparatus at the Veterinary College, it was resolved, on the motion of Mr. H. O'Leary, that the matter be referred to the Council for consideration.

Vote of Thanks to Outgoing Officers.—A vote of thanks to the outgoing officers was proposed by the President and passed with acclamation.

The Hon. Treasurer and the Hon. Secretary suitably replied.

After the meeting, the members were entertained to refreshments by the President.

J. J. O'Connor, *Hon. Secretary.*

FOOT-AND-MOUTH DISEASE IN DORSET

The existence of foot-and-mouth disease was confirmed on Monday among cattle at Iwerne Courtney, Blandford, Dorset. The area subject to restrictions in the movement of stock lies in the counties of Dorset, Somerset, Wilts., and Hants.

R.C.V.S. COUNCIL MEETINGS

Summary of Proceedings

In the report of the Council Meetings of the R.C.V.S., to be published in an early issue of *The Veterinary Record*, we are glad to note that the Council, acting on behalf of the veterinary profession in this country, has decided to send an address of congratulation to His Majesty on the occasion of the celebration of the 25th anniversary of his accession. We are sure that every member will heartily approve the action of the Council and of the sentiments expressed in the address. The years of His Majesty's reign have seen the most important developments which have occurred in the history of veterinary science and veterinary education. This is a matter to which we hope to refer in the near future.

As is always the case, the bulk of the work of the Council is done in Committee. The Finance Committee's report shows that the Council have, in commemoration of the King's Jubilee, doubled the grant to the Library of the College, and have placed the balance in hand of the Smith Memorial Fund to the credit of the Library Endowment Fund. This decision is certainly in accordance with what we feel would have been the wishes of the late General Smith. We propose shortly to publish a complete list of the subscribers to the Library Endowment Fund, but regret to have to record that it does not appear to have met with the success hoped for. When it is considered that the Library sent out on loan 284 books during the first quarter of this year, it will be agreed that the services which the Library is rendering the profession by making all up-to-date literature available, deserve the most generous support the profession can give.

The report of the Examination Committee deals with the routine examination of educational certificates and applications for concessions. It has been decided that the syllabus of examinations be amended to allow for the subject of Animal Management to be taken by candidates either at the Second Examination or at any time before the Third Examination.

The Registration Committee dealt with several cases of unregistered persons using the title "Canine Specialist" or similar titles, and we are glad to note that in four cases at least satisfactory undertakings were received from the delinquents. No fewer than 13 cases against members for some alleged breach of professional conduct were considered, but we are glad to see that in most cases, on enquiry being made, a satisfactory explanation was forthcoming.

The Parliamentary Committee's report shows that the Committee is alive to all matters affecting the interests of the profession which arise in Parliament or elsewhere, and that suitable action is taken.

The decision of the Council to postpone the consideration of the provision of additional accommodation does not, we hope, mean that the matter is to be shelved. The inadequate accommodation at Red Lion Square must hinder the work of the Council and prevents the proper extension of the Library. No doubt the main consideration is money, for the provision of more commodious headquarters will involve, we fear, a greater capital expenditure than may have been anticipated. Nevertheless, it is a matter which must be faced sooner or later.

In Parliament

The Lords and the Attested Herds Scheme

In the House of Lords, on April 10th, Lord Cranworth called attention to the Tuberculosis (Attested Herds) Scheme for milk production; asked His Majesty's Government to explain the purposes which this scheme was devised to achieve, and to state their reasons for believing that the desired results would be attained; and moved for papers. He said that the scheme had not been brought forward in consultation and co-operation with the producing interests. The premium which was to be given out of public money would be available for only a comparatively small number of producers, most of them men of considerable means. His greatest objection to the scheme, however, was that there would not be one single tuberculous animal less in this country. There would not be one single gallon less of tuberculous milk drunk. It would merely be drunk by other and, unfortunately, poorer people.

Lord Rowallan, referring to the fact that no provision was made for the inclusion of big herds, said he did not suggest that the big herds should be subsidised out of money provided under the Milk Act, 1934, but he thought that some means should be found by which they could receive official recognition of freedom from diseases and also qualify for segregation at shows.

Earl de la Warr, Parliamentary Secretary to the Ministry of Agriculture, said that the Attested Herd Scheme had been referred to as a failure on the ground that so few applications had been made for entry into the scheme, but it did not start until February 1st, and they all realised that in the farming world things did not always move very fast. Up to the present 78 applications had been received, of which 27 had already been granted. A number of other cases were under consideration. He would admit that the response was not really very gratifying, but when they put the scheme forward they realised that they were, for the first time in history, endeavouring to tackle this great problem, and that therefore the scheme must be somewhat experimental. The proposals of the noble lords would receive most careful consideration.

The motion for papers was withdrawn.

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The following questions and answers recorded in the House of Commons prior to the Easter Recess:—

Warble Fly

Major Owen asked the Minister of Agriculture whether, in view of the suffering endured by

cattle and the financial loss caused by the warble fly, he proposes to take any steps to eradicate this pest?

Mr. Elliot: I am well aware how desirable it is that the warble fly should be eradicated. The hon. and gallant Member is no doubt aware that a committee established by the Leathersellers' Company have already done much to encourage voluntary action by farmers to deal with the pest. Any proposal to take general and compulsory measures would raise considerable practical difficulties, notably difficulties arising from the importation of cattle during a time of the year when it is impossible to tell whether or not they are infested with the pest, and on these and other aspects of the problem I am still in consultation with the interests concerned.

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Accredited Milk Scheme

Captain Heilgers (for Major Mills) asked the Minister of Health whether he will, as a temporary or permanent measure, authorise such rural and urban district councils within the administrative county of Southampton as apply to him, to grant licences to sell Grade A milk under the Milk (Special Designations) Order, 1923, in order to avoid unequal treatment of milk producers who desire to qualify for the bonus under the accredited milk scheme, in view of the fact that the Hampshire County Council does not at present exercise its powers under the above Order and has no meeting at which it can decide to do so until May 13th, and that at present only a small proportion of the district councils in the county can grant these licences?

Mr. Shakespeare: My right hon. Friend is in communication with the county council upon this matter and, pending their decision, he does not think it desirable to authorise any further district councils to grant licences to producers of Grade A milk.

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Remounts

Brigadier-General Clifton Brown (for Major Carver) asked the Financial Secretary to the War Office whether the action of his department in purchasing 798 remounts from Northern Ireland and the Irish Free State in 1934 as against 662 in 1933, whilst reducing the number purchased in England and Wales from 806 to 761, was due to the inability of the purchasing officers to find sufficient horses of the right quality in Great Britain: and, if so, whether he is satisfied that the existing grant provided by the War Office to improve light-horse breeding in this country is sufficient to enable the proportion of these remounts purchased in England and Wales to be substantially increased during the next few years?

Mr. Hacking: The Irish market provides an especially suitable remount of the light draught type; but, consistently with keeping in touch with that market and obtaining the best value for money, it is the policy of the Department to purchase as many as possible of its horses in the United Kingdom. As regards the grant, it is too early to enable any reliable conclusions to be drawn as to its adequacy, but it is hoped that it will prove satisfactory.

Notes and News

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

April 26th.—Meeting of the Yorkshire Division, N.V.M.A., at Leeds.

April 26th.—Meeting of the Royal Counties Division, N.V.M.A., at Reading University.

April 29th.—Meeting of the Editorial Committee, N.V.M.A., at 2, Verulam Buildings, Gray's Inn, W.C.1, at 4 p.m.

April 29th.—Meeting of the Midland Counties Division, N.V.M.A., at the Equitation School, Weedon, Northants.

May 9th.—Last day for nominations for election to R.C.V.S. Council.

May 23rd.—Voting Papers issued R.C.V.S. Council Election.

May 30th.—Last day for return of Voting Papers R.C.V.S. Election.

June 6th.—R.C.V.S. Annual General Meeting, 12 noon; Luncheon, 1.15 p.m. Annual General Meeting, Victoria Veterinary Benevolent Fund, 12.45 p.m.

June 13th.—D.V.S.M. Examination begins, Edinburgh.

July 29th—August 2nd: N.V.M.A. Congress at Belfast.

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PERSONAL

Appointments.—Mr. George McKee, M.R.C.V.S., D.V.S.M., District Veterinary Officer to Cheshire County Council, has been appointed Chief Veterinary Officer to Shropshire County Council.

Mr. A. L. Mullen, M.R.C.V.S., D.V.S.M., Veterinary Adviser, The University of Liverpool, Department of Veterinary Pathology, has been appointed a District Veterinary Officer to Cheshire County Council.

Devon County Council have appointed Mr. J. H. Patterson, M.R.C.V.S., of Torrington, Devon, as Assistant Veterinary Officer.

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Will.—Phillips, Mr. Henry, of Ipswich, retired veterinary surgeon (net personalty £2,323). £7,840.

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Northern Veterinary Society's President.—Mr. J. R. Rider has been elected president of the North of England Veterinary Medical Association, of which he has been honorary secretary and treasurer for ten years.

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Mr. H. D. Sparrow, M.R.C.V.S., of Rochford, near Southend, is recovering from rat-bite fever. The malady is thought to have arisen from a bite from a cat which he had been called in to destroy. The cat, it is believed, was infected by eating a rat that came off a barge in the River Crouch, while it is supposed that the rat came from a ship which had arrived from Japan.

R.C.V.S. OBITUARY

Boulton, George, 20, Crewe Road, Sandbach. Graduated London, 1885, died April 14th, 1935; aged 70 years.

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Tailby, Mark, 85, Harborne Road, Edgbaston, Birmingham. Graduated London, May 2nd, 1860. Died April 14th, 1935; aged 95 years.

We learn with the deepest regret of the passing of Mr. Mark Tailby, who was both one of the oldest and one of the most esteemed practitioners in the country. The sad news reaches us as we go to press early with this Easter number, and in our next issue we hope to publish an appreciation of Mr. Mark Tailby from one who had the privilege of his friendship over many years.

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REGISTRATION AND REGULATION OF OSTEOPATHS BILL

Select Committee's Enquiry

The Measure Dropped

(*Continued from page* 444.)

Important memoranda were submitted to the Select Committee of the House of Lords, when their enquiry into the above Bill was continued on Monday of last week.

The first was a memorandum of evidence, submitted by Sir Norman Walker, president of the General Medical Council, on behalf of the Council. The memorandum set out a summary of the conditions of practice in Great Britain before the passing of the Medical Act, 1858, and of the steps which led up to that enactment, in order to indicate the purpose of the Legislature in establishing a register of qualified medical practitioners and constituting a general council to keep the register and regulate admission to it; together with a number of observations on the Bill before the Committee.

In reply to Lord Elibank (a member of the Committee), Sir Norman Walker said that he would have no objection to an investigation of the principles of osteopathy by a Royal Commission.

Lord Elibank: Who should sit on it? Could you really set up a Royal Commission that would be impartial and would examine the question with fresh minds?—Yes.

Lord Elibank: You would favour such a course?—I would certainly not take any exception to it.

Ministry's Memorandum

Sir Arthur Robinson, Permanent Secretary to the Ministry of Health, was then called. In a memorandum which he submitted on behalf of the Ministry it was stated that before a statutory register was given to osteopathy it was essential that there should be included in the statute a definition of the meaning of osteopathy so clear and precise as to enable it to be differentiated without possibility of mistake from other forms of practice. The Minister apprehended (it was stated) that the passage of the Bill into law would be followed by claims from the osteopaths to participate in insurance practice and in the duties entrusted to medical practitioners by the Public Health Acts.

The memorandum concluded: "It appears to the Minister that a sufficiently strong case has not been made out for the adoption of the proposals in the Bill at the present time, and that the proper action at present is to set on foot an organised and careful scientific inquiry into the principles and practice of osteopathy by a body suitable for the purpose. Should this view be taken, those who are now practising osteopathy would, pending the result of the inquiry, have the choice open to them, should they be dissatisfied with their present status, either of qualifying themselves for admission to the medical register or of constituting a voluntary register of osteopaths and establishing, as soon as may be, effective training institutions in this country for the appropriate qualification of persons who may desire to be admitted to that register in the future."

In reply to the Chairman, Sir Arthur Robinson said that the inquiry which was suggested might be of the type that was undertaken from time to time by the Medical Research Council.

Mr. S. P. Vivian, the Registrar-General, was also called and submitted a memorandum regarding the proposal in the Bill enabling registered osteopaths to certify the cause of death. It was stated that "unless the new class of certifying practitioners is as fully equipped as the present class of registered medical practitioners in all those respects of training and experience which go to form a sound opinion of the causation of death, their admission must result in prejudice to the important public interests served by these certificates in regard to both public safety and medico-statistics."

Evidence was also given on behalf of the Royal College of Surgeons of England in opposition to the Bill.

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Decision not to Proceed

The Select Committee concluded the hearing of evidence on April 12th, after having held twelve sittings. It was intimated at the beginning of the proceedings that the promoters of the Bill did not wish the measure to proceed any further in view of issues which had arisen since the opening of the committee's inquiry. The committee thereupon decided to hear two more witnesses in opposition to the Bill and not to ask for any further evidence. Lord Amulree was in the chair.

Mr. J. H. Thorpe, K.C., who appeared for the promoters of the Bill, said that at the beginning of the inquiry he indicated that he would ask their lordships to consider what standard should be laid down for admission to a register that would distinguish between qualified and unqualified osteopaths. In the course of the inquiry it became inevitable that a different issue should be pursued—namely, that it was desirable, before such a register was granted, that the osteopaths should prove the scientific justification for their theory. That being the issue, their lordships were now in the position of being asked to make a finding on a matter which, with great respect, was beyond some of them, and if they were to wait until they had decided that matter they might be there longer than was anticipated.

The Bill required for its main structure the existence and continuance of the British School of Osteopathy. Dr. Macdonald had himself said in his evidence that he was not satisfied with the standard of that school. As the school now existing formed such a material part of the Bill, the promoters did not feel justified in asking their lordships to pass the Bill with the school as at present constituted.

Dr. Macdonald and Mr. Streeter had both said that they would welcome any opportunity to

prove that their doctrines were scientifically sound, and Sir Norman Walker, of the British Medical Association, had said that he would not object to a Royal Commission or some other form of inquiry. They had also heard the suggestions made by Sir Arthur Robinson, of the Ministry of Health, who might be considered as representing the careful opinion of his Majesty's Government.

It was proposed to adopt immediately the suggestion that a voluntary register of osteopaths should be formed. As soon as possible a school of osteopathy, qualified in the view of the osteopaths to give a proper training, would be constituted, and a clinic would be brought into operation. He would do no more than urge on the committee that an inquiry in the form of a Royal Commission, or some equally responsible body, should be asked to consider the scientific justification for the theory and practice of osteopathy.

Whatever the merits of the present case, he would point out that the present Bill and the present inquiry had been asked for and promoted by the osteopaths themselves. One medical witness had suggested that their cause was fraudulent, but he (Mr. Thorpe) would remind them that it was the osteopaths who had come into the open and urged the presentation of this Bill in Parliament. They were ready to submit with confidence to any issue that had to be decided hereafter by an impartial tribunal. So far as the present Bill was an issue before the committee, he was instructed not to press it.

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ACCREDITED PRODUCERS SCHEME AND "GRADE A" REGULATION

The Council of the Shorthorn Society have passed a resolution recommending the deletion from the Milk (Special Designations) Order (which has been adopted as regulating the conditions of the Accredited Producers Scheme) the proviso which states that no animal which to the knowledge of the herd owner has reacted to the tuberculin test shall be added to the herd.

In the opinion of the Council, this condition, by encouraging producers to refrain from testing their herds, will be a deterrent influence in freeing herds from tuberculosis, and will make it impracticable for any accredited producer to work up a grade A (t.t.) or attested herd.

[In the above connection, we are informed that at a recent meeting of the Lancashire Division, N.V.M.A., the following resolution was passed: "That this meeting of the Lancashire Veterinary Association, believing that the conditions requiring that known reactors to the tuberculin test must be removed from 'Grade A' herds is obstructing attempts to create tubercle-free herds, urges that the Milk (Special Designations) Order of 1923, Third Schedule, Part III A (1) should be amended by the deletion of the words . . . 'form part of or . . .'."]

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SIR WALTER GILBEY AND THE ROYAL VETERINARY COLLEGE APPEAL

Addressing a specially convened gathering of London Press representatives, at the Pantheon, Oxford Street, W., on April 11th, Sir Walter Gilbey, the veteran sportsman, appealed for support for the "Giant Nose-bag 250,000,000 Farthing Endowment Fund" which is being raised on behalf of the Royal Veterinary College Hospital.

The fund is receiving the support of the Duke of Gloucester and the Lord Mayor of London. Some 40 veteran War horses will carry special regulation Army nose-bags to collect for the fund. Among the owners who are lending their horses are Lord Digby, Lady Yule, Lord Middleton, Lord Mottistone, Lieut.-Colonel P. R. Laurie, Brigadier-General C. S. Owen, Major C. Henry, Colonel E. J. Skinner, Major F. C. Naumann, Captain J. H. Body, Colonel W. H. Brooke, Captain F. Bradley, Mr. G. Kevill-Withers, Mrs. L. Train, Mrs. Irene K. Dawson, Mr. Allan F. Druce, Mr. J. P. Walker, the Misses M. and B. Machin, Mr. G. A. Tomlin, and Miss Gladys Yule.

Sir Walter said that his object in convening that possibly unique gathering was to enlist the sympathy of the Press on behalf of one of the most important centres of professional training in this country—the Royal Veterinary College, which he wanted to make the best-dressed institution of its kind in the world. (Laughter.) The College had suffered terribly in the past from the neglect of the Government; indeed, it had been described as a national disgrace, and this condition, until recent times, had been a great deterrent to the effective training of veterinary students and the prosecution of veterinary science. Work in re-building the whole of the College was now in progress, and towards the cost of that great undertaking a quarter of a million pounds had been obtained, most of it by voluntary means. It was now necessary to raise a further like sum for the establishment of Chairs and the creation of an adequate endowment fund.

Continuing, Sir Walter said that he had been invited, amongst others, to enter into this scheme, in view of his known interest in the welfare of animals, and he, for his part, had undertaken to do what he could to induce riders in the Row to contribute to what was now known as the "Giant Nose-bag 250,000,000 Farthing Endowment Fund" on behalf of the College Hospital. His appeal, of course, was made largely to young riders, and in this connection he thought it was a hopeful feature that more children were riding now than ever before, and a greater number of riding schools were established.

The veterinary profession was one of the most essential necessities of this country, looking after the health not only of the horse but of every other type of animal. That was of particular importance to this country, to which every other country had to come for its pedigree stock. To maintain that premier position this country must have adequately equipped and endowed veterinary schools. If the Government failed, or if the general public failed, in the endeavour which was being made to promote that essential object, it would be impossible to foretell the degree of disaster which would overtake the breeding interests of this country. It was naturally their desire that in London there should be situated the foremost veterinary school in the world, and that they would certainly have if only they could secure sufficient money for the purpose. He only hoped that the Press, not only of London, but of the whole country would assist in the furtherance of that worthy object.

Sir Walter Gilbey's appeal was supported by Sir Frederick Hobday, Principal and Dean of the Royal Veterinary College, who expressed his gratitude to Sir Walter for the splendid efforts

which he had made to enable those responsible for the great scheme the Royal Veterinary College now had in hand to bring their efforts to fruition. The idea of the 250,000,000 Farthing Fund originated at the International Horse Show, and there were now 40 odd horses which participated in that great event scattered about Great Britain and which were collecting for the Fund. These horses took part in many of the important campaigns of the Great War.

Six years ago the walls of the College were literally propped up by order of the surveyor, who considered that they were a danger to the students, while they dared not hold their classes in the upper rooms. They had now 330 students, 67 of whom were women.

Sir Frederick, who said that at one time their financial position was so hopeless that it was decided to close down, outlined the steps which had been taken to raise the Endowment Fund, which included a successful appeal to the Government to increase financial support from that source. They still relied, however, upon the animal-loving public of Great Britain for the greater part of their resources. If the public, encouraged by the Press, would find the College the money, they could provide the buildings and staff requisite to render the London College the finest centre for veterinary teaching in the world.

Sir Walter, in thanking the Press for their attendance, said that a portion of the money raised by his own efforts in the Row would be used to establish a series of lectures for the purpose of teaching riding and horsemastership to the youth of the country.

. . . . .

A giant padlock (some ten inches square), handwrought by Mr. F. Byrne of Burton-on-Trent on behalf of the National Master Farriers' and Blacksmiths' Association, Spencer Street, Leeds, was presented on Saturday, April 13th, to Sir Frederick Hobday, to secure the "Giant Nosebag 250,000,000 Farthing Endowment Fund."

After the presentation, which was made at the Annual Dinner of the Association, at Slater's Restaurant, High Holborn, an illuminated scroll in the ceremonial "Book of the Nose-bag" was signed by the President and other officials.

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ARMY VETERINARY SERVICE

London Gazette—War Office—Territorial Army

April 5th.—Maj. A. B. Mattinson, o.b.e., m.c., having attained the age limit, retires and retains his rank, with permission to wear the prescribed uniform (March 14th).

India Office: Commands and Staff

April 5th.—The follng. officers have vacated appts. in India:—

A.D.V.S.—Lt. Colonel J. O. Andrews, d.s.o. (Feb. 16th); Lt.-Colonel V. C. Leckie, d.s.o. (Feb. 16th); Major C. M. Stewart (Feb. 9th).

Comdt. A.V.Sch, Ambala.—Maj. S. O'Donel, m.c. (Dec. 10th, 1934).

Regular Army Reserve of Officers

April 9th.—The follng. having attained the age limit of liability to recall, cease to belong to the Res. of Off.:—

Lt.-Col. H. Greenfield, o.b.e. (March 22nd); Maj. A. B. Mattinson, o.b.e., m.c. (March 14th).

Movements of Officers

Major P. Howard and Captain I. D. Macrae, who have been on leave *ex* India, reverted to the Home establishment with effect from March 2nd. The former was posted to the Southern Command and is now stationed at Portsmouth; the latter was posted to Edinburgh, but is at present undergoing a course at the Royal Army Veterinary School at Aldershot.

Lieutenant R. H. Duff was posted from Aldershot to Edinburgh for duty on April 1st.

Lieutenant E. H. Lewis-Bowen has been posted from Aldershot to Woolwich for temporary duty, during the illness of Lieutenant I. H. Chalmers. Lieutenant Lewis-Bowen will return to Aldershot when Lieutenant Chalmers returns to duty.

Major W. M. Rouse is at present in this country undergoing a course at the Royal Army Veterinary School at Aldershot. On completion of the course he is taking a month's leave and will then return to Egypt.

Major H. Stephenson, m.c., and Captain J. S. Kingston are at present in this country on leave *ex* India.

Major E. Wallace is at present in this country on leave *ex* India pending retirement on July 8th.

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"THE LISTENER" ON "THE VETERINARY PROFESSION"

The official organ of the British Broadcasting Corporation, in its issue of April 3rd, published the following editorial article, which we reproduce as likely to be read with interest and appreciation by members of the profession.

. . . . .

"Among the minor centenaries of 1935 will be the celebration which the R.S.P.C.A. will organise of the hundredth anniversary of the first Act of Parliament which extended legal protection to all domestic animals. It is exceedingly well known that it is one thing to pass a law and another to get practical results from it. Enormous progress has undoubtedly been made in safeguarding and improving the lot of animals, but the position to-day of that veterinary science upon which the physical well-being of domestic animals so largely depends, does not warrant any great complacency. Englishmen are fond of thinking that they are distinguished by their love of animals, and therefore they go on to imagine animals fare better in Great Britain than anywhere else; but goodwill without knowledge and skill cannot by itself achieve what it may wish. It comes as a surprise to many English men and women when they are told that in the field of veterinary equipment their own country is by no means a leader; that country after country in Europe and America, even South-East Europe and South America, goes much further in finding money to set up and to equip faculties for veterinary work in the universities. It does not matter that the motive is a practical one. In every country agriculture is, at the lowest, an industry of enormous importance, more often it is the main or sole industry. Research into the diseases of animals is generally recognised the world over as sound business. To the question, what have we done in Great Britain to save annual monetary losses totalling millions from death and lowered productivity among our animals, 'the almost incredible and shameful answer,' in the words of Sir Merrik Burrell, 'is, less than any other highly civilised community.'

"In every other well-ordered European country well-built and adequately equipped veter-

inary colleges exist. Germany and France spend more in maintenance of veterinary education in one year than the total of Government grants in this country over a hundred successive years. When it is remembered that domesticated farm animals in Great Britain are worth about £156 million; that even in the age of motor cars the horse population is over two million; that there are three million dogs on whom very various per head valuations are set; and that the rapidly fluctuating but generally increasing cat population cannot be gauged with statistical accuracy in the absence of licences, but is plainly large —the magnitude of the field before the veterinary profession is apparent. But Great Britain is also the centre of a great colonial empire with some 40 tropical or semi-tropical countries in all of which animal welfare has the most direct bearing on the health and wealth of the human population.

"The contrast is striking between the greatness of the task and the official arrangements made to meet it. The veterinary profession is an old one, organised in the 18th century and protected by an Act of Parliament in 1875. It takes five years to qualify, and it is one of the few professions which are understaffed instead of over-crowded to-day. Its organisation still stands outside the British university system. Only three academic centres, London, Liverpool, and now Edinburgh, offer facilities for veterinary degrees, but Cambridge will be making a fourth this year. The Government finds some £30,000 a year, and some years ago, following the very emphatic report of an official Commission, agreed to give a capital sum of £150,000 if the public found £100,000 for the proper equipment of the principal centre of study, the Royal Veterinary College in Camden Town. The financial crisis delayed this as it delayed so many other good and necessary works, but the Government did not withdraw its offer, the private benefactions were forthcoming, and to-day Great Britain is on the way to being able to look Bucharest and Budapest and Buenos Aires in the face.

"It is much to be regretted that the public does not trouble to distinguish more closely between the organisations which come forward collecting money to be used in treating animals. From the nature of the case the money given is often given foolishly, by people excessively attached to some particular pet for whose recovery they are grateful or whose memory they wish to perpetuate till the end of time. They do not trouble to ask themselves how exactly their gift is going to be spent. Some organisations, like the Canine Defence League, are admirably careful to conduct their work in close touch with qualified veterinary surgeons, and there is no reason why any organisation should not maintain friendly contact with the profession whose studies must be the main source of improved knowledge and technique. Animal lovers must recognise that at the present time, amid such widespread human distress, their benefactions will not unnaturally be criticised. Those benefactions can be most convincingly defended when they are given, not from irresponsible sentimentality, but from a desire to increase human competence and human facilities in a field of work which is not only humane towards the brute creation, but is concerned at one remove with the health of man. The wholesomeness of meat, the cleanliness of milk, matter immensely to us and arise directly from the physical well-being of beasts.

Correspondence

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

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"EAST COAST FEVER—A WARNING"

To the Editor of The Veterinary Record

Sir,—On page 280 of this year's volume of your journal Mr. G. B. Purvis, under the above heading, preaches an interesting sermon based on a text culled from an abstract, and without reference to its context. I will not say that I wish Mr. Purvis had read the full report before sounding his warning, because had he done so he would not have written the letter, which is informative except in its reference to policies in East Africa.

If any of the readers of your paper care to know what is the policy of Tanganyika Territory in connection with East Coast fever they will be able to get full information from my Annual Report for 1934 when it appears. To show that my department is not blindly following South Africa's lead I extract the following paragraphs from the manuscript copy of the 1934 report:—

"What action should be taken in connection with this disease? At present not much; but whatever is done must be based on fullest possible knowledge of this most intricate subject. In certain areas complete eradication by systematic dipping is a justifiable aim; in other areas fuller use of natural immunising processes should be made; elsewhere the disease may be kept in check cheaply by hand-picking ticks. Meanwhile research should be continued to fill the important blanks in our knowledge. We must know which ticks besides the common brown one carry the disease, and we must have full knowledge of the life histories of all vectors. We must be able to correlate climate and vegetation with the distribution of these vectors, and we must understand the factors which affect vegetation in the directions of favouring or of harming them. We must also know why the percentage calf mortality in enzoötic areas is usually about 50 per cent. We must, in short, understand why the East Coast fever position in any area is what it is; then we have in our hands the key to adequate control.

"During 1934 we tried to fill in some of these blanks by (1) attempting to correlate the presence of certain ticks with the incidence of disease, (2) continuing the study of vegetation in selected areas where the incidence of the disease was known, (3) collecting data concerning calf-mortality in the enzoötic areas represented by the Iringa Highlands and Mbulu Plateau, (4) studying the effectiveness of immunity acquired in one district to protect against the disease of another district, (5) continuing observations with a view to knowing what is the East Coast fever position in every part of the Territory, (6) experimenting to ascertain what is the smallest tank that is effective."

I am, Sir,

Yours faithfully,

H. E. Hornby.

Director of Veterinary Services,
Tanganyika Territory.

Department of Veterinary Science
and Animal Husbandry,
Mpwapwa,
Tanganyika Territory.

April 1st, 1935.